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No. 6.—DISEASES AND ACCIDENTS REFERABLE TO THE HUNTING FIELD AND TO THE TURF*

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When the Provisional Committee did me the honour of inviting me to present a paper to the Section of Veterinary Medicine and Surgery at the Congress, it suggested as the title "Diseases and Accidents Referable to the Hunting Field and to the Turf." On collecting my ideas, I found myself considering the hunting field in its various aspects rather than the race course and very naturally my thoughts concentrated on that wonderful huntsman John Jorrocks and some of his immortal sayings, and the first that occurred to me was "Hunting is the sport of kings, the image of war without its guilt and only five and twenty per cent. of its danger."

A review of the notes which I have made on the subjects with which it is proposed to deal, has suggested that our friend Jorrocks, in his estimate of the percentage of danger, was undoubtedly thinking only of the human element and not of his equine or of his canine friends and helpmates. Taking horse and hound through an average season, one is really fortunate if one gets through without one of the many disabilities affecting one's favourite hunter, or, in the case of the M.F.H., his best working hounds.

Diseases and Accidents affecting Hounds

DISTEMPER.

The disease which presents itself as naturally the most dreaded, is distemper. Most of us, unfortunately, have in the past seen the ravages of this scourge go through the whole of a promising young entry and leave perhaps only a handful of the most indifferent, because the best always died, or so we liked to think. I said in the past because to-day, thanks to Laidlaw and Dunkin, the picture I have painted is only an ugly nightmare, and now, by the help of preventive inoculation, distemper is an unknown quantity in the up-to-date pack of hounds. As a result, the standard of every pack has improved and the commercial value of the ordinary individual hound has correspondingly decreased.

Having mentioned preventive inoculation, I feel that I cannot allow the opportunity to pass without referring to one method, namely, the virus-serum method, officially known as Laidlaw and Dunkin Method II. This consists in giving at one visit two injections, one of serum and one of virus, with the necessary precautions. I regret to have to admit that my first experience of this method, some two or three years ago, was anything but happy, as there was a complete breakdown in two well-known packs of foxhounds. The procedure in these instances was that recommended, namely, first to inject serum, followed by the virus. On all subsequent occasions I have modified the technique to the extent of reversing this procedure and now give the virus, followed by the serum, and I venture to suggest that on this alone depends success. In the *Record* of May 27th this year reference was made to this method, and the writer considered the possibility of the immediate administration of the serum interfering with the formation of antibodies, thus preventing the acquisition of an active immunity. The procedure then advocated was to allow an interval of from half-an-hour to one hour between the two injections. I consider the interval between the two injections of no great importance for the conferring of immunity, and, personally, when treating young foxhounds, I inject the virus and then proceed to unpack the serum from its various wrappings and inject it straight away. There is, in fact, an interval of two or three minutes between the two injections. I have adopted this method and this method only for the past three years and can honestly say that I have never had a breakdown. I believe the secret of success lies in the order of administration, namely, virus and serum at a small interval, and if this method is successful it must commend itself on the score of economy where a pack of hounds is concerned. That it is successful I have definitely satisfied myself by my own experience. That this method commends itself as the more appropriate, I submit is only too plain. With Laidlaw and Dunkin Method I, that is, the vaccine and virus method, there is an interval recommended, varying in duration from seven to 20 days. Herein lies the weakness of this method, for a puppy receiving vaccine is not resistant to the virus for at least one week whereas, having received serum, he is resistant at once.

In cases where protective inoculation has not

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been practised and one is confronted with an outbreak of distemper, the curative serum is the only hope of stamping out the attack so far as the affected are concerned, provided the disease is not too far advanced. If secondary infections are already present the outlook is not so hopeful. In such cases one should concentrate on the "in-contacts"—each one receiving a large dose of the prophylactic serum and the bi-daily use of the clinical thermometer, repeating the dose in such cases as indicated by the charts. Thanks to Laidlaw and Dunkin, we have to-day not only a sure and certain method of preventing this scourge of the kennel, but also, in the event of its occurrence, a speedy way of eradicating it.

Leptospiral Jaundice.—Next to distemper, jaundice accounts for more fatalities, especially in very young hounds, than any other disease. In fact, it would be more correct to say, in view of the adoption of the preventive inoculation for distemper in some kennels, that jaundice heads the list to-day. The more common form of jaundice is due to a Spirochæte first found by Inada and Ido in 1915 and now recognised as the cause of Weil's disease or infective jaundice of man, and of yellows or enzoötic jaundice in hounds. The leptospira occur in apparently healthy rats, which are carriers of infection. The adult hound is rarely attacked, probably due to an acquired immunity. In view of the fact that recurrent attacks are not seen, it is highly probable that one attack confers a lifelong immunity. Dunkin has reported a case of leptospiral jaundice in the fox, and in view of their partiality for rats, it is highly probable that the disease so frequently seen in foxes is due to the Leptospira. The urine from hounds recovering from an attack is infective for some considerable time. The risk of infection to the attendant in charge of hounds affected with this disease is by no means remote. In outbreaks in two different kennels cases developed resulting in serious illness. In each instance there was an abrasion on the attendant's hand, which was probably the point of infection, and it is also worthy of notice that in each case the curative canine serum produced good results.

Hæmorrhagic and icteric types of jaundice are met with. The attack is usually sudden, temperature may be high—though in icteric forms it is often sub-normal. Vomiting is common, the vomit frequently being blood-stained. The fæces are usually light coloured and chalky in the icteric type, and soft and blood-stained in the hæmorrhagic. The urine is blood-stained. Death may occur in a few hours or in two to three days. On *post-mortem* examination the tissues are jaundiced and enteritis is present. Intussusceptions are common; the liver and kidneys congested or pale and jaundiced. The lungs are bright red and frequently show the typical lesions described as "butterfly."

Preventive treatment of leptospiral jaundice consists in the administration of two doses of vaccine at a week's interval. This treatment is usually adopted between the time of weaning and sending the puppy out to walk, or, in other words, at eight to ten weeks old. Mortality is high and one hesitates to advocate preventive treatment. In an outbreak, "in-contact" hounds may receive a dose of anti-leptospiral serum with beneficial results, but as a curative the serum is somewhat erratic in action, although this may be due to erroneous diagnosis. At times, serum is of the greatest value in conjunction with injections of normal saline solution, providing the case is not too far advanced. Sporadic cases of jaundice are less common and may be due to catarrh either in the bile duct itself or in conjunction with duodenal catarrh, or due to impaction of the bile duct with ascarides, as is sometimes met with in young puppies.

Piroplasmosis. — Piroplasmosis, due to *Babesia canis*, causes malignant jaundice in packs of hounds in most parts of the world. The imported foxhound is very susceptible. Infection is through the agency of ticks, the dogs of the country acting as carriers or reservoirs of infection. Treatment is by intravenous injection of trypan blue, but similar treatment so frequently advocated for jaundice in this country is usually disappointing.

Hæmorrhagic Gastro-Enteritis.—A frequent cause of casualties during a season is the onset of an intense hæmorrhagic gastro-enteritis closely simulating canine typhus. The etiology of this disease is obscure, but the onset always occurs 24 to 48 hours after a day's hunting and is popularly supposed to be the result of the ingestion of large quantities of stagnant water, which may act as a predisposing factor apart from any bacterial infection it may contain. Lesions of the buccal mucous membrane of the gums are constant.

Nephritis.—Nephritis is essentially a condition affecting old hounds and is usually of the peracute type. A five- or six-seasoned hound may be in good condition, apparently healthy, running up with the pack, and, without any warning, he loses flesh rapidly, his coat becomes harsh, and the skin hide-bound, there is loss of appetite, excessive thirst, polyuria, and anæmia of the visible mucosæ; coma and death follow rapidly. The condition may have existed for some time undetected and become progressively worse until clinical symptoms are manifest. Treatment is of no avail.

Septicæmia.—Septicæmia, as a result of wounds contracted in the hunting field, is very common and may result in permanent damage to to the toes of the feet or to the limb itself and not infrequently may terminate fatally. It is a

common practice in all hound kennels to inspect the feet of each hound after hunting, for the purpose of removing thorns and generally disinfecting or cauterising any wounds or abrasions. It may be that during this inspection a hound's foot or leg may be noticeably large or perhaps a thorn may have been removed from one of the pads. The procedure is hot fomentations for varying periods. The hound is coupled to a ring in the wall and stands with the injured limb in a warm antiseptic bath. Usually this has the desired effect after one or two treatments, but occasionally the swelling spreads up the limb, the toes and pads increase in size, serum exudes and big sloughs appear, sometimes involving pads and toes, and, in rarer cases, other parts of the limb. In cases where the swelling increases rapidly, free incisions should be made where indicated and amputation of toes and pads where necessary. Anti-streptococcic sera are of the utmost value in such cases.

Hygiene.—It is a common practice of hounds of both sexes to urinate on their beds. If the kennel management is slack and the straw is not constantly changed, hounds lie on a warm, moist bed. Again, hounds come in wet through and are put in their lodging room where, in a few minutes, the whole atmosphere is heavy with moisture. If allowed to remain in this lodging room for the night, instead of being removed to a dry one, or at least given dried bedding, trouble is being invited and will assuredly develop. Rheumatism affects hounds in various ways. It may be a muscle or group of muscles affected, which, as a rule, is not very serious unless lameness becomes a habit and the muscles become atrophied, but when affecting joints it does become serious. The joints most commonly affected are those of the vertebræ. The conformation of a hound's back will often give a clue to the spinal column being affected and this can be further supported by a sudden pressure across the withers, when the hound will sink to the ground with a sharp cry. In more advanced cases the hound is unable to jump up off his front legs and take all the weight on his hind quarters. This is the picture of a more or less gradual case of anchylosis of the spinal vertebræ. Cases often appear to develop suddenly in the hunting field. One may notice a certain hound, holding his own with the rest of the pack, suddenly stop galloping and, keeping his back rigid, adopting a peculiar trotting action. Such a hound is known as a " runner," and again the condition is due to advanced anchylosis of the backbone. Cases have been seen in which the entire backbone has been fused into three pieces and yet the hound in question had apparently moved normally up to the time when it suddenly became a "runner." Heredity is undoubtedly one of the chief factors in the incidence of such cases, but it is also probable that streptococcic infection plays a rôle.

Rachitis and Epiphysitis is essentially a disease affecting young hounds. It is seen in puppies at walk, where the puppy walker's enthusiasm at the local puppy show has outrun his capabilities as a kennelman and, having obtained his puppy, he discovers it is more of a handful than he anticipated, with the result that it is denied its liberty and its general health suffers and is very soon reflected in its joints and subsequently in the long bones of its limbs. The epiphyses become enlarged, the bone becoming spongy and losing its density, the shaft of the bones of the fore-arm bends outwards, the stifles are turned outwards and the hocks turned inwards. In more advanced cases the ribs are affected, showing the condition known as " rickety rosary " and the puppy presents a picture of abject misery so that he is difficult to recognise as a once healthy member of a respectable litter. Providing such a case is seen in time, a suitable diet containing the necessary vitamins, combined with sunlight and such adjuncts as parathyroid and " adexylin," will bring about a more or less satisfactory return to normal. In this connection I should like to mention cases of obscure lameness occurring in puppies of the same litter when the trouble was undoubtedly located in the stifle joints but the exact cause could not be determined. These are usually diagnosed by the use of X-ray photographs and are due to epiphysitis of the distal end of the femur. Other joints are apparently not so commonly affected and the condition is possibly the result of deficient calcium metabolism.

The condition known in kennels as " hog-jaw " consists of a deformity of the jaws, in which it would appear that development of the inferior maxillæ has been arrested. This is a congenital disease which is always recurring in certain blood lines. Sometimes whelps are noticeably affected at birth and are promptly put down, but more often it develops while the puppy is at walk and may pass detection until it is returned to kennel. In a minority of cases the arrest appears to be only temporary and in time the abnormality disappears.

Worms.—Foxhound puppies appear especially prone to infection with enormous quantities of ascarides, and it is the practice of kennelmen in most kennels to start dosing their charges at about five weeks with one or other of the well-known proprietary vermifuges. The resultant loss in either direct or delayed casualties is heavy. The stronger whelps may pass varying amounts of ascarides with impunity. Some of the more delicate either get away with a very bad shaking or pay the price of a rule-of-thumb method that cannot be too strongly deprecated.

The ideal method of treating whelps for worms is not to use drastic vermicides and vermifuges, but to use a bi-weekly dose of the medicinal paraffin in the period between weaning and sending out to walk. The action is gentle and quite effective and has no harmful after effects. Casualties are unknown and there is no loss of condition and none of the various sequelæ so commonly met with when more drastic methods are employed.

Sterility.—Sterility in the dog hound is frequently met with and nothing is more disappointing to an M.F.H. than to find that one of his best working hounds is incapable of producing puppies. Apart from the fact that he is unable to transmit his good qualities, whether it be tongue, nose or pace, he has probably been allowed perhaps a couple or more bitches who, as a result of his shortcomings, are not doing their duty to the pack for that season. A common cause of sterility is due to an old-fashioned idea that a dog should not be used as a stallion hound until he has proved himself in his work and prowess in the field, so that perhaps he would not be used before his third or fourth season. It is an excellent plan to allow such young dogs as one will probably want to use in later years as stallion hounds, one or two bitches during their first and subsequent season. This will go a long way towards removing this trouble.

Depraved Appetite.—One of the greatest, if not the greatest, vices in a kennel of hounds is that of depraved appetite, where hounds will devour with avidity the excreta of their fellows. The resulting loss of condition and lack of spirits is all too apparent. The remedy lies in the preparation of the food, which has been improperly boiled and therefore is improperly digested. It is a vicious habit and one which is very hard to eradicate once well established.

Contagious Abortion.—Contagious abortion among bitches causes serious losses but, fortunately, unlike contagious abortion in other species, does not recur. An outbreak in kennels usually lasts throughout the breeding season, and the majority abort usually about the fifth to the seventh week. An attack appears to confer immunity, for it is noticed that a bitch will carry her puppies the normal period the season following an abortion.

Hysteria.—I feel that this section of my paper would not be complete without some reference to this collection of nervous symptoms which is commonly known in this country by the name of "hysteria," but which I suggest is far more aptly termed in America "frights." Among puppies or young hounds at walk it is unfortunately only too common and appears to be increasing. It is worthy of note that puppies sent to walk where the disease has already occurred in previous seasons soon fall victims to an attack or series of attacks, varying in severity from one or two mild attacks and recovery to continued attacks, coma and death, or perhaps ultimate partial recovery after several days' unconsciousness, in which case the puppy appears mentally unbalanced and is put down on his return to kennels. Many good walks have, as a result, become closed to the hunt, but in some cases where it has been possible to change the kennel usually reserved for foxhound puppies to another building though on the same ground, there has been no recurrence. It has also been observed that affected puppies removed to another walk may show no further symptoms, but if returned to their original walk, even after an interval of several weeks, the attacks return. All the theories advanced for the possible cause of this trouble have sooner or later been exploded, but it does seem more than probable that there is a distinct connection between the conditions under which puppies are kept and the incidence of the disease. Feeding is undoubtedly a very prominent factor in this connection, probably in conjunction with some bowel infection. This latter observation is prompted by the fact that *post-mortem* examination in a large majority of cases shows a variable amount of enteritis. It is further worthy of note that, so far as the foxhound is concerned. practically every pack has experienced it amongst its puppies at walk and perhaps even in the first few days after the young entry return to kennels, but with the exception of an isolated case or two, an outbreak of hysteria among a pack of hounds is almost unheard of. If, as has been so frequently suggested, excitement is a predisposing cause, and imitation a secondary cause, surely a pack of hounds in the hunting field should offer ideal conditions for the occurrence and rapid spread of this affection. Recovery from an attack or series of attacks may be complete. The severity of the symptoms or the number of attacks does not appear to have any definite bearing on the ultimate issue. A hound that has been badly affected may become perfectly normal, whereas one that has had only a slight attack may be left mentally unbalanced, but the reverse is probably the commonest termination.

Equine Diseases and Accidents

Disease and accident in hunters and blood stock can occasion very serious loss, not only in a pecuniary sense but also on the score of disappointment, as, for instance, the loss of a favourite hunter during the season. It is not so much the actual illness or accident, though that may be serious enough, as the resultant loss of condition, which may take weeks to regain after recovery from the disability.

Strongylosis.—Perhaps the most serious condition affecting horses to-day, both in racing

and hunting establishments, is the prevalence of strongylosis. This disease is of the utmost importance and is responsible for heavy losses to all classes of horse owners, but especially to the hunting man. It is principally confined to young animals grazing on old horse pastures and therefore is very frequently met with both in racing and hunting stables.

The symptoms are those of general unthriftiness, with staring coat and loss of condition. Diarrhœa is sometimes present, the animal appears dejected, there is grave debility and death frequently supervenes. These symptoms may be so very gradual in their onset as to escape notice until the disease has reached an advanced stage. In a large number of cases the trouble is never suspected until conditioning is started and the horse fails to respond, or perhaps the trouble does not assert itself until the season is well on its way and a sudden loss of condition occurs, for an affected animal is incapable of sustained hard work. Other symptoms noticed are periodic diarrhœa; perhaps the bowels are loose for a few days and then become normal, the diarrhœa recurring at intervals of a fortnight or so, then becoming more frequent and ultimately continuous. The subject becomes anæmic and emaciated and dies from debility resulting from chronic diarrhœa. This condition is more probably due to the larval stage and not to the mature worm. Fæcal examination under the microscope will show a very heavy content of eggs. Attacks of colic may be frequent, due to the mucous membrane of the colon being extensively damaged or through the presence of worms in the mesenteric arteries. Intermittent and recurring lameness in one or both hind legs may be observed, which finally becomes persistent, due to aneurysm in the anterior mesenteric artery or its branches. Strongylosis is so prevalent to-day that it would almost appear necessary for a fæcal examination to be made before a certificate of soundness is complete. To produce disease it is necessary for the parasites to be present in large numbers. They do not multiply in the body of the horse, but are picked up individually from the herbage. The presence of many worms in the horse is therefore the result of heavily-infected pastures, itself the result of overcrowding. Infection can be carried in hay, but it is doubtful if a water supply can be responsible as the larvæ cannot swim and their oxygen requirements are such that they cannot live in water over six inches deep. Stable manure is naturally infective but, if heaped and allowed to heat, decomposition will kill the larvæ, except those in the outer six to eight inches of the heap.

Treatment is of value only for the expulsion of mature worms found in the intestines. The immature forms found in various organs and those encysted in the mucous membrane of the intestines are not affected by any drug.

Dilatation of the Heart.—A not-infrequent condition affecting the racehorse and hunter is dilatation of the heart, either as a result of cardiac weakness or due to valvular incompetence. Heart weakness or cardiac insufficiency is a decreased capacity of the heart muscle to deal with extra strain. It occurs as a result of muscular over-exertion, under which condition there is an excess venous inflow to the heart accompanied by a corresponding increase in arterial resistance. Such a condition may occur when a horse's work has been restricted as, for example, during a period of frost, and on work being resumed he experiences a long and tiring day. A similar condition may result following an infectious disease, *e.g.*, influenza, or strangles.

Symptoms of heart fatigue usually occur suddenly after or during over-exertion. There are dyspnœa and cyanosis, extreme weakness of the pulse with increase in its rate, and profuse perspiration. In some cases the development of circulatory disturbances is more gradual, and takes place following over-exertion, if such is not excessive but occurs repeatedly. In chronic cases symptoms develop gradually and at first consist of cyanosis and prominence of veins, especially of the jugular, which exhibits a pronounced diastolic pulsation. This is soon followed by subcutaneous œdema in front of the chest and under the chest and abdomen, the prepuce and extremities. Attacks of giddiness occur, horses frequently falling at exercise. Dilatation usually follows heart fatigue, as already pointed out, if it is of long duration or rather pronounced. If of old standing, there may be marked atrophy of the cardiac muscle.

Symptoms of dilatation are an increased area of heart dulness; the force of beat is increased, due to the greater portion of the heart being in apposition to the chest wall; the systolic beat is increased in force, the second sound small or absent altogether; the pulse is fuller, but may be intermittent.

Whistling is a condition which is a very serious affection in horses associated with either the turf or the hunting field. If the hereditary character of roaring and whistling had been more generally accepted in the early days of horse rearing, no doubt our thoroughbreds and hunter stock would have been better off to-day. There appear to be two recognised degrees—either a horse is described as a "slight whistler," which probably implies that in his slow paces it is possible to detect a slight unsoundness and not at the canter or gallop, or *vice versa*, or else he is described as a "whistler," which would appear to cover all other degrees, however well marked. It may be so pronounced as to cause the subject serious inconvenience,

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or so slight that it is said not to "stop" him. Generally it is progressive, though some horses appear to go for season after season without appearing to make any more noise. General condition undoubtedly is a great factor, and many horses who are "thick-winded" when only half fit, would easily pass when racing or hunting fit.

Epistaxis.—This may occur from one or both nostrils, the cause being apparently congestion of the blood vessels of the nasal mucous membrane resulting from violent exertion, especially in warm weather, or more frequently to hæmophilia or to trauma. Adrenalin has almost a specific action in such cases. Epistaxis is distinguished from hæmoptysis, or bleeding from the lungs, by the blood in the latter case being foamy and always coming from both nostrils; moreover, there is accelerated respiration and even dyspnœa.

Azoturia.—The occasional occurrence of cases of azoturia in the hunting field, especially after a frost, is worthy of note as the rapidity of its onset and the alarming symptoms are the cause of the utmost concern to the unfortunate rider, who always imagines his horse has a broken back. In such cases prognosis is not too favourable. Cases have also been noticed where perhaps hounds have run fast and put their fox to ground and during the ensuing delay horses stand about and get chilled. On moving off, the horse will suddenly be noticed to go very stiff behind, its action becoming worse at every step, until progression is almost impossible; prognosis in such cases is hopeful.

INJURIES

Injuries are unfortunately all too common in the hunting field; their name is legion and the causative factors almost as numerous. The most serious are fractures, because in the large majority of cases destruction is the only course to adopt. Delayed fractures are of common occurrence and incidents are numerous where horses have travelled considerable distances with one or both metatarsal bones fractured, with a pelvis fractured and even with a spinal fracture.

Causes of fractures may be sub-divided into predisposing and exciting. Under the first heading the present-day road with its super-slippery surface must rank first, and next the superficial situation of a bone, exposing it to violence. Exciting causes are external and internal violence. The commonest form of external violence is a kick from another horse, and of internal violence excessive muscular contraction, as may occur during galloping or jumping, or a combination of the two as frequently occurs when a horse fails to clear a ditch and drops its hind quarters into it.

The pastern joint is one of the commonest positions for fracture and this ranges from a simple fracture or split pastern to a comminuted or multiple fracture, where the joint resembles a bag of shot, the latter being impossible to treat, whereas the former readily responds. The heavy falls which hunters and steeplechasers frequently experience occasionally lead to a fracture of the vertebral column, sometimes in the cervical region, but more commonly in the dorso-lumbar region. In cervical fracture death rapidly follows. In dorso-lumbar fracture the bones involved are usually the last one or two dorsal vertebræ and the first one or two lumbar. Paralysis of the hind quarters generally follows at once, the hind limbs are limp and project at right angles to the body, the muscles tremble and patchy sweating breaks out. In the animal's struggles the fore end is raised, but the hind quarters are incapable of movement. Behind the fracture both sensory and motor nerves are paralysed and the tail hangs limp.

Falls in the hunting field or when chasing, which do not result in fracture of the vertebral column, very often result in serious after effects, though at the time the horse may appear none the worse. Stiffness of the lumbar muscles may be apparent the following day and may in time respond to treatment, but in many cases a definite weakness or loss of action is noticeable and the horse is never the same again. In such cases *post-mortem* examination reveals exostosis of the lumbar vertebræ.

Lameness may be due to varied causes, or the cause may be obscure, but the immediate result is always the same, enforced idleness from regular work and resultant loss of condition.

Flexor Strain is a common cause of lameness in horses doing fast work. The structures involved may be the perforans, the perforatus, the check ligament and the suspensory ligament—more usually of a foreleg. In flexor strain there is more or less injury to the sheath, and in some cases it is mostly the sheath that is injured. Where the tendon is injured, 24 hours after there will be a thickening at the seat of the injury, extending perhaps for an inch or two. Where the sheath alone is affected there is a diffused swelling over some part of the tendon, extending for several inches and perhaps from the knee to the fetlock. If pressure bandages are applied and an examination is made the following morning, the leg will be found to be quite fine, but if the bandage is left off and the horse exercised the swelling quickly returns. In flexor strain or strain of the check ligament, lameness is continuous until the strain is cured. In sheath injury, however, the horse may trot out sound, but lameness returns with exercise. Rest and treatment usually result in the tendon sheath returning to normal, but should the condition become chronic, though the tendons become fine, there

will be a thickening of the sheath. Bowed tendon is the result of strain of the perforatus usually occurring a few inches below the knee. Perforans strain occurring near the knee or at the junction of the tendon and the check ligaments always causes acute pain, whereas if the injury is just above the fetlock lameness is not so well marked and the horse will probably be lame at the trot but will stand and rest quite level.

Prognosis in cases of strain of the perforans just below the knee is always unfavourable, but in other positions and in strain of the perforatus it is hopeful.

The commonest form of flexor strain in the hind limb is known as curb, which occurs at the back of the hock at the head of the metatarsus and involves the perforatus tendon. Sometimes the calcaneo-cuboid ligament and also the annular ligament of the hock are involved. A simple curb or one affecting only the perforatus may cause only slight lameness, which quickly disappears with treatment. In cases where other structures are involved and constituting a diffused curb, lameness is recurrent.

Navicular Disease.—This is a rarefying ostitis combined with roughening of the perforans tendon; the articular surface of the bone is but seldom affected. Heredity is the chief factor in navicular disease, though concussion is a contributory cause. A horse with navicular disease has no commercial value.

There is no exemption of the hunter or thoroughbred as regards diseases affecting the feet, so common amongst other animals, but it is noteworthy that the conditions under which they are kept seem to be more favourable than is the case in other horses.

Laminitis may occur in hunters from overexertion, long journeys, concussion and sudden chill; such cases, as a rule, can be described as simple laminitis. The symptoms diminish in a few hours and usually by the third or fourth day the horse is well on the way to recovery. In such cases the foot does not suffer much, the only result being that the horse may go on his heels.

Bad shoeing is responsible for many foot troubles, and negligence on the part of the stable-lad or groom plays a similar part. An example of the former is the presence of a corn; of the latter, thrush.

Corns are very rare in unshod feet; consequently, shoeing is blamed as their primary cause. Concussion is also a prime factor which accounts for the frequency of their appearance in the fore-feet as compared with the hind. Conformation of the foot may predispose. A common cause of corn in a hunter is a stone accidentally fixed between the heel and the frog.

A corn remains aseptic as long as there is no breach in the horn to allow the entrance of infection. If the contusion is severe, the horn becomes infiltrated with serum and constitutes a moist corn. If infection ensues through an accidental fissure or from excessive paring, a suppuration or festering corn is the result.

Affections of the skin, such as mud fever, cracked heels, saddle galls, and also thrush, should not occur in the well-regulated stable. They are, in the large majority of instances, the result of carelessness. The same remark applies, though in a lesser degree, to the occurrence of over-reaches. While ready to admit that an over-reach will occur whatever precautions are adopted, many more occur because owners leave too much to their farriers with regard to the make and fit of the hind shoes. A concave shoe set well back involves very little extra trouble in the making and fitting, but its use is well repaid by the freedom from over-reaches.

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Discussion

The foregoing paper occupied the attention of the Veterinary Medicine and Surgery Section on the morning of Thursday, September 21st, when there was a very large attendance at the Town Hall, Llandudno.

Captain R. L. Lewis, M.R.C.V.S., D.V.H., President of the Section, introduced the opener of the discussion, Captain Brayley Reynolds.

Captain Brayley Reynolds, *O.B.E.*, M.R.C.V.S. (Newmarket), in opening, said:—

Before proceeding to discuss the details of this paper, I think the time opportune to raise a matter which has a bearing upon the paper as a whole, and which, in my view, is one of considerable importance. Those who have served on a provisional committee concerned with the making of all arrangements for an annual Congress will realise the great amount of time and work that has been so ungrudgingly given by members of the Provisional Committee to ensure the success that has this year attended their labours. One naturally hesitates, therefore, to make comment upon any part of their work. Any hesitation I may have had is greatly lessened, however, by the knowledge that the Provisional Committee can hand on any onus there may be to a special sub-committee; and I would ask this body to accept what I have to say as a suggestion for future guidance and not as a criticism of past work. The matter to which I wish to refer is the choosing of subjects for the papers to be presented at the Annual Meetings; or, to put this in another way in order

to emphasise the particular point I wish to raise, the defining of the terms of reference to the writer chosen for the subject decided upon. I feel sure I shall be voicing the opinion of many members if I say that in the paper under discussion we have a good illustration of the result of a too wide and loose title for a paper. It seems to me that such a paper cannot possibly serve so good a purpose, proportionate with the energy expended by the writer in its preparation, and with the time of the Annual Meeting taken up with its discussion, as one dealing with some more specific subject. In the latter case not only is the task of the writer—and I speak from personal experience—and of those wishing to take part in the discussion rendered easier by enabling them to concentrate on the one subject, but the more limited the field to be covered the more closely may it be explored. The greater detail of the paper and precision of the discussion would enable the chosen subject to be dealt with so exhaustively that our knowledge of it should be brought right up to date with great benefit to us all personally. Papers dealing with a number of clinical cases, and so introducing a variety of subjects for discussion, may and do fulfil a splendid purpose at Divisional meetings, but for this Section of Medicine and Surgery at the Annual Meetings of the Association we should look for something more thorough and more concise. It is quite unnecessary to attempt to cover the whole gamut of medicine and surgery in the course of two or three years. In the present instance I think Major Comerford has more than doubled the intended scope of the paper. I have no manner of doubt, from the title of the paper, that it was originally intended that its subject matter should be limited to the horse; the inclusion of the word "Turf" seemed to girth it on to that animal; but even so, quite a fair-sized volume would have had to be written adequately to deal with the various diseases and accidents referable to the hunting field and to the turf. When I read the title of the subject chosen for Major Comerford to write upon, I greatly sympathised with him, but I consented to open the discussion on the paper as I thought that I might be able to follow where he chose to lead, not in the field across his Wendy pastures, as there he might be much too bold a pilot for me, but in a chair across some sheets of paper.

While sympathising with Major Comerford, I am unable to congratulate him upon his choice of the various subjects introduced into the paper. Certainly distemper and strongylosis have some bearing upon the hunting field, but so have parturition in the one animal and castration in the other. I had looked for greater detail in some diseases and accidents *solely* referable to the hunting field and to the turf and a closer adherence to those occurring in animals while actively engaged in these spheres; I had looked for some greater detail in regard to the more common fractures, their treatment and their untoward sequelæ; and I had looked for something concerning the various types of wounds and suggestions for more up-to-date methods of their treatment, with possibly much to be learnt from this latter.

Although the greater part of the paper deals with various diseased conditions of the dog, I propose making very little reference to these. Not that I wish in any way to check discussion on this part of the paper, but that the subjects dealt with are of such wide scope and importance that I am sure the points in regard to them that should be raised will be much better and more concisely put by those whose knowledge and present experience with this animal are so much greater than mine. I can so economise my time in dealing with some of the questions referable to the animal with which I am more closely in touch. It will be sufficient for me briefly to refer to one or two important points.

Distemper.—Major Comerford, referring to the method he now adopts in the inoculations of virus and serum, states that he gives them in this order and roughly at a two or three minutes' interval. He refers to a communication by Wilkinson on this matter in which the latter suggests an interval of not less than half-an-hour and not more than one hour, although this writer, too, quotes two instances in the case of large dogs in which half-an-hour seemed too long an interval, and he makes what seems to me to be a rather pertinent observation in regard to the necessarily greater dilution of the serum in large dogs. This suggests to my mind whether it might not be possible by careful observation by those who have much of this work to do, or by experiment by laboratory workers, so to graduate the length of interval, or the dose of the serum, per pound body weight of the animal, that a fairly reliable standard may be approached. Rationally the latter method should be the more effective if the success of the inoculation does in fact depend upon the giving of the virus before the serum, as is suggested. By making the interval very short one is approximating the effect to that of giving the serum first. Three minutes seems a very short handicap in which to allow Mr. Virus to cover much ground. Perhaps a laboratory worker may be able to enlighten us on the rate at which the body tissues react in producing specific antibodies following the stimulus of infection.

Hæmorrhagic Gastro-enteritis.—In connection with this I would mention an outbreak that came under my notice only last year in which the symptoms displayed closely indicated this condition. I mention it as showing the necessity to explore every channel in order to arrive at a possible cause. Only a moderate and

varying degree of success had followed the treatment adopted, until it was finally discovered that it was the usual practice to make all hounds, on returning to the kennel after hunting, walk through a shallow bath in a cemented passage-way containing a solution of common salt and one of the commoner coal tar disinfectants. Further, as the new kennel huntsman belonged to the school that does not allow hounds to have drinking water by them, disinfectant had been put into the water tanks which were fed by rain water from the roofs.

The cleansing and dressing of the many small wounds there must be on hounds' feet after hunting by walking them through a bath is commendable, but the solution used should be harmless, because there could be nothing more certain than that the individual hound would lick its legs as soon as it was on its bed. I do not know whether this practice is general, but if so it would be interesting to hear what solution is commonly used. Suffice it to say that when it was discontinued in this kennel and the water tanks boarded up, this particular trouble ceased and did not reappear.

Before leaving this part of the paper dealing with dogs, I would venture to express the hope that we may hear something in regard to vitamins with reference to gastro-enteritis, rickets and hysteria from those who are in close touch with these diseased conditions.

Strongylosis.—In passing into that part of the country in which I feel a little more at home with the state of the going and fences, it is extremely unfortunate immediately to come up against that rasping bullfinch strongylosis, and unless I am much mistaken it has an open ditch on either side of it. It is really too big to tackle if we wish to see anything of the run, so I propose doing as I feel sure Jorrocks would have done—find a gate or go round. And in this I am fortunate in being able to exclaim, along with this worthy gentleman: "'Eavens be praised, there's a gate—and a lane too." A gate has kindly been provided by Noel Pillers, and the lane by the discussion on his paper. I very much regret that I was not able to be present at this discussion, but I am confident it would lead to considerable repetition should I go too deeply into this subject. There are several points raised by Major Comerford, however, to which I feel I must refer. I fully endorse his view that strongylosis is at the present time the most serious condition affecting horses. It is, however, by reason of the secondary troubles for which it is primarily responsible that it holds this deplorable position. Major Comerford says the condition is frequently met with both in racing and hunting stables. I would go further, and, if one defines strongylosis as infection with strongyles, I would say that it is ever present in every untreated animal, and I would exclude very few of the treated.

The symptoms of the condition that he has mentioned were rightly stated by Noel Pillers as end results, and are comparable to the empty lamps of the unwise virgins. In regard to young bloodstock, the high degree of alimentary infestation that may be co-existing with apparently the most perfect bodily health and condition is nothing short of astounding. And it would seem there must be factors, other than a high alimentary infestation, that are responsible for the so-called typical appearance of a horse suffering from strongylosis. One such factor undoubtedly is diet. It is very easy to understand why a higher percentage of these typical cases is observed among hunters and cart horses than in bloodstock, because, generally speaking, they are more frequently left to look after their own well being than their more fortunate, because more potentially valuable, brethren. The better housing and feeding these latter get in their early days greatly help them not only to resist infection but to resist the evil effects of infestation. A factor, however, of the utmost importance is the type of infection: infection in the bowel wall, or in the mesenteric artery with the resultant thrombosis. This latter is, in my experience, far and away more responsible for deaths, ill-health and secondary diseases in horses than the mere presence of large numbers of strongyles in the alimentary canal. Major Comerford suggests the necessity of making a fæcal examination before granting a certificate of soundness. I would far rather add to the usual routine a rectal exploration to ascertain the condition of, or around, the anterior mesenteric artery. And by the way, loth as I am to lighten this particular vessel's load of evilness, I think Major Comerford will admit a palpable error in ascribing to aneurysm of it those cases of intermittent and recurring lameness encountered in one or both hind limbs; surely one or more of the iliac arteries was meant. I am afraid that time will not allow of my raising more points in regard to strongylosis, much as I would like to have done, and had, in fact, already written upon.

Dilatation of the Heart.—While accepting the description of this condition and the symptoms displayed when in a pronounced state, I would like to raise questions as to the importance that should be attached to any intermittency in the heart beats, and as to what notice should be taken of the existence of a murmur in the cycle of heart sounds. Examining the heart of every horse prior to operation has revealed that the former is exceedingly common; it is practically always present in seasoned hunters, but is less frequent in racehorses, although in these it is by no means uncommon. With reference to the former, the existence of a murmur, I think I am right in saying that nowadays in the human subject the mere existence of a murmur, if unsupported by any

other symptom of heart deficiency or defect, is not viewed with the same importance as formerly. I have in mind a heavy-weight blood hunter in which a very distinct murmur could be heard immediately following the second beat. From my knowledge of the horse and what it had been doing and from the trial to which I subjected it I recommended its purchase. It went in the very forefront of Leicestershire for six years, but afterwards I was informed it had been condemned for heart disease. For what reasons, or what symptoms it showed, I do not know. I was left wondering whether I had been lucky in not taking more notice of the abnormal sound than I had done. While speaking of the heart may I suggest that examination of it should be made before a buckle of the roller or rug is undone or the horse's head is even untied. The taking off of the rug or the putting on of a bridle will cause some heart sounds that might have been heard to become totally masked. And may I venture a word of caution—it may sound presumptious on my part, but I have reason for so doing—that care should be taken not to confuse the beat produced by spasm of the diaphragm with that of the heart.

Bleeding from the Nose or Lungs.—Major Comerford dismissed this in a few lines. I wish it could be as easily dealt with in practice. It is of very considerable importance on the turf. I have brought it forward somewhat out of its position in the paper so as to deal with it next to some of the abnormal conditions of the heart that have been mentioned, because there is not much doubt that in many cases of it this organ is responsible. Slight, and it may be temporary, dilatation or insufficiency of the heart, tending to some amount of heart block, may cause such a degree of congestion of vessels in the membrane lining the upper air passages that they may give way. Hæmorrhage from the lungs may be similarly produced and is much more serious in its results. In view of the path taken by some of the common parasites during their passage through the body and the likely injury they may do in their course, it seems that they should not lightly be exonerated from all blame in regard to this question of blood vessel breaking. I think it highly probable that this is yet one more evil to be placed to their discredit. Then, too, one must not lose sight of the recognised fact that certain lines of blood are definitely incriminated with this weakness. Major Comerford speaks of adrenalin as having a specific action. Perhaps he would give some indication as to the dosage and time of administration of this drug that he has found to give such beneficial results. I know that by some it has been recommended to give it close up to the time of a race, but, apart from the fact that this would not knowingly now be allowed, it has appeared to me to be irrational; for, since the immediate effect is an increase in blood pressure, one would expect an increased tendency for the weakened vessel to give way.

Whistling.—I cannot find much comment to make on what is said on this subject except that if by what is said the writer intends to convey the impression that there is a tendency, not only among the dealing fraternity but among veterinary surgeons to use terms, when describing wind infirmities, with the definite object of minimising the seriousness of the infirmity, then it is to be deplored. It were better to call a spade a spade. Perusal of examination certificates deposited in sale yards often furnishes amusing, if not edifying, reading.

I hesitate to extend the scope of the paper, but since wind infirmity has been introduced, I feel I cannot resist the temptation of introducing under this heading a particular phase of the subject that received some notice in our weekly journal at the beginning of last year. I refer to the correspondence on "grunting." It came to an all too untimely and indefinite end. It was prompted by the insertion in an issue of the journal of the following query: "Is grunting in the horse a disease, a symptom of disease, or a habit or vice?" That it revealed that one of our brethren had been convicted of negligence because he did not "grunt" a horse and had heavy damages imposed, although as we were informed, a personal confession of negligence had much to do with the conviction, should suffice that this question of grunting being an unsoundness or not should be answered definitely and for always in no uncertain manner. Some of us with years of experience may presume to think that we have some idea of the particular note of this "grunt of disease." But what of those with fewer years of experience, or of the recently qualified? Are they to be liable to conviction because they are unable justly to appraise the correct note of this very problematic indication of disease, or the degree of "tail" it possesses? If so, may I suggest to some of the advanced teaching schools that, for the early education of graduates, they get busy with the production of gramophone records indicating the precise tone and degree of "tail" of which notice must be taken.

Azoturia.—Does not Major Comerford think some of the cases to which he refers in the latter part of the paragraph under this heading are in reality only cases of myositis, the result of want of condition? I would here remark that there are quite a number of thoroughbreds that always show considerable, suddenly occurring, stiffness following strong work, irrespective of careful feeding and regular exercise. Usually it is the muscles of the back or quarters that are principally affected, and the animal is said to be "set-fast." It is probable that some defect or insufficiency of the circulation in certain muscles or group of muscles leads to poisoning of them by sarco-lactic acid or other products

of muscle work. I exclude from these cases the cases of lameness resulting from iliac thrombosis.

INJURIES

And now we pass to injuries, which, I think it will be agreed, are much more important than disease as concerning incapacity resulting from active participation in the hunting field or on the turf.

Fracture of the Pastern.—The first point of considerable importance we come to under this heading is fracture of the pastern, and it is dismissed by the author in six lines! Something in regard to its differential diagnosis would have been enlightening; and something in regard to treatment might have been instructive. Frequently one is called upon, and is expected, to give a quick diagnosis—by no means an always easy matter, and although a radiograph will help in the majority of cases it will not always be conclusive, nor is it always readily available. Also, one hears of treatment varying from immediate blistering and turning the horse loose in a box to plaster bandaging. That recovery may take place following the former should not be accepted as a recommendation for it. It seems only rational that some sort of bandaging should be employed to immobilise the joint, or in any case to lessen the dorsal flexion of it and give support to the lower part of the limb. Earlier and more complete recovery will take place in all cases if this be done; and in some cases it is imperative that it should be done. Some method that allows of ready inspection of the injured part in addition to the giving of efficient support is the ideal to be aimed at. The use of plaster of paris bandages is not without serious drawbacks, but the employment of poro-plastic felt over careful padding and bandaging gives excellent results. After soaking in hot water this material can readily be bandaged on to form an intimate and complete mould of the leg, setting quickly and firmly. As a rule, the splint need not be kept on longer than two or three weeks. If sufficient length of rest be given after all lameness has disappeared so as to allow all inflammatory reaction in the bone thoroughly to subside, no exostosis, producing lameness or interference with the action of the joint, need be anticipated, and complete recovery and usefulness will be obtained.

Fracture of the Pedal Bone.—This is not mentioned, but is of sufficiently frequent occurrence to deserve a place. In many cases a history of external mechanical injury assists diagnosis. In those cases that have occurred during work or in which there is no history, diagnosis is not easy but has to be made from the particular symptoms of the lameness and by the exclusion of other conditions as a cause for it. A radiograph is the best aid to diagnosis and will always disclose the fracture. Prognosis should not be so favourable as in split pastern.

Fracture of Vertebral Column.—If all the classical symptoms of "broken back" mentioned in the paper were always present, diagnosis might be simplified, but even then would not always be easy. I am sure others beside myself have unpleasant memories of having to decide this point when a horse has fallen and is unable to rise, and while perhaps a crowd of wiseacres are all giving gratuitous advice of a corresponding value. A badly blown animal can provide much food for thought. And what of those animals that, although they have a vertebral fracture, get up and walk away? I raised a question in a short report of a case some little time ago as to the opinion to be expressed upon an animal when being examined for soundness that for the time being is only showing a *conformation* suggesting a previous injury to the back. Personally I think more notice should be taken of this in the light breeds than a grunt.

Flexor Strain.—Any attempt to deal with this condition at this late period would necessarily have to be of such a trivial character that it is not worth embarking upon. I am unable, however, to let pass Major Comerford's last paragraph under this heading: the one referring to curb. So entirely opposed to the generally accepted ideas upon this condition did the opinions expressed in this paragraph appear to me on first reading them that I strongly suspected that owing to their position in the paper the author had written them after having burnt too much midnight oil in writing the preceding parts of his paper and that his mind had started working crosswise.

I think the *vice versa* of this paragraph, both in regard to the more common seat of the trouble and the degrees of lameness, will be the opinion still he'd by the majority.

Major Comerford opened his paper by quoting Jorrocks; I am prompted to conclude my remarks in the same manner. I trust that no editor, or reviewer, when he comes to deal with this paper and the discussion upon it will be tempted to summarise his final assessment of them by using the words of this redoubtable huntsman when referring to some of the opinions that had been expressed by Gambado and others. He said: "When such great men talk lightly on a subject, little minds catch the infection, and far outstrip the author's most sanguinary conceptions."

I thank Major Comerford for his paper and I hope a good discussion upon it will follow; and I thank you, Mr. Chairman and gentlemen, for the patience with which you have listened to the remarks with which I have tried to open this discussion.

Major W. F. Aston (Shrewsbury) said that he, like the opener, was somewhat disappointed

in that paper, because it was a golden opportunity for the dissemination of added information to members on small points, and by that he meant that it was a great thing to know little things well. (Hear, hear.)

There was very little detailed stable management available to the ordinary student and the young man who had a leaning towards veterinary science; therefore he thought it was necessary, now that the search for true knowledge of horse management had become very keen, that they should stress all those small details when such an opportunity was afforded as the presentation of this type of paper.

He was going to restrict himself to the horse, because he thought that if they were to attract the right type of man to the veterinary profession it would still be through the medium of the horse. There was an old adage that a horse and a woman will make a fool of any man.

Concerning flexor strain, the essayist had stated that there was a certain amount of thickening of the sheath. In his view, it was very important that they should realise what he might call "the warning." The ordinary client out hunting, or who wanted to have a point-to-point horse and train it himself, nowadays did not know what that warning meant, and he thought it was a great pity that many young veterinary surgeons did not know it either. The first symptoms of strain of the flexor tendon were seen two or three hours after the horse came in from fast work, when all that could be observed was just a little puffiness of the sheath of the tendon. If the tendon had been strained there was no question that the "warning" must not be ignored; otherwise, there was great risk of a breakdown.

Amongst the injuries in the hunting field, there was a short remark on over-reaching: he could not think that the essayist really emphasised sufficiently the importance of that. Over-reach was a very general cause of serious injury, and yet it had been passed over by what read like an attempt to fit the foot to the shoe. A very useful means of preventing over-reach was to file down the sharp front and inside edges of the hind shoes. Keep a file in the saddle room window and use roughened shoes before fast work.

The essayist had stated that mud fever, grease, etc., should not occur in a well-managed stable. That reminded him of the numerous occasions upon which he had met with mild eczema of the skin of the white heels of chestnut horses. It was a very difficult condition to cure and prevent, and he would like to hear the essayist's remarks on that matter.

Major Geo. W. Sturgess (Thurnby) observed that there was just one point that occurred to him through the reading of that paper, and that was with reference to dilated heart. In a life-long experience in the tropics he had found that the condition of the skin, as regarded sweating, was quite well known to the horseman in its relation to heart trouble. It was quite common out there to find horses that did not sweat freely, and almost the next development was heart trouble. Those cases went on and on, until eventually they were quite liable to end in sudden death during a gallop.

There was also a reference to the arthritic lesions and the erosions of the articular cartilages of the fetlock and pastern, including the navicular bone. They believed that many of those cases were due to malnutrition, an exclusive cereal diet being productive of osteoporosis and osteomalacia. In these conditions he thought that veterinary surgeons would do well to look to the feeding, and see that it was not of such a type as was likely to conduce to these conditions. The balance of minerals and vitamin content in the diet was most important in both disorders.

Captain A. McLean (Belfast) said that he rose as the result of a remark made by Captain Reynolds with reference to the recording of functional and other sounds on gramophone records. For 18 months he had been doing this work in regard to chest sounds in connection with tuberculosis.

They had been recording those sounds electrically, and making *post-mortem* examinations of the animals. He hoped to record the results in due course.

Mr. P. J. Howard (Ennis) observed that, like Captain Reynolds, he would like to stress the point, for the guidance of writers of future papers, that the terms of reference should be defined. The essayist on that particular occasion deserved the thanks of the meeting for the enormous amount of work that he had tried to accomplish, but his efforts would have had much more success had he been able to confine himself to the consideration of accidents in the hunting field and on the turf, excluding the dog.

He desired to stress another point raised by Captain Reynolds in connection with those cases that occurred either in the hunting field or on the racecourse, where horses were supposed to have injured their backs. He would advise the younger men, particularly, not to be in too great a hurry in making up their minds. Sometimes they would see a horse go down in taking a fence and, the animal being unable to get up, nine people out of ten would say that he had broken his back. Ten minutes afterwards the horse would rise of his own accord and walk away, and a week later he might win a point-to-point. That was seen more often in the hunting field than on the racecourse, for in the former the horse was often extended for a gallop at the commencement of the season when he was not really fit for it. Those were the cases that well illustrated the necessity for exercising great caution in diagnosis.

Another suggestion he would like to make was that, whenever possible, they should try to get the horse on his legs before making the final decision, because in his endeavours to get up, the animal might do even graver mischief to himself than originally existed: one could always get up poles and put him in slings.

Fracture of the pedal bone was referred to by Captain Reynolds. He did not know whether the latter had noticed that fracture of the pedal bone of a hind limb would make a more useful recovery than that of the pedal bone of a fore limb. Why that should be so it was not easy to explain.

Like Major Aston, he thought it was a pity that all our present-day graduates had not better opportunities of being trained in reference to the many practical things that mattered so much, particularly about the horse, which had made the veterinary profession.

Major T. Dalling (Beckenham) said that in the course of his paper Major Comerford had made reference to two subjects upon which he personally had been working for some time, *viz.*, distemper and leptospiral jaundice. He desired to congratulate Major Comerford very much on his finding another method for the prevention of distemper—the injection of distemper virus prior to the inoculation of hyper-immune serum. As they all knew, thanks to Dr. Laidlaw and Major Dunkin, methods had been devised whereby distemper might be prevented in dogs of all breeds, including foxhounds. The great point that Laidlaw and Dunkin showed was that it was necessary to introduce living virus into the system of the dog in order to ensure the development of a permanent immunity. The preservation of that virus was very important: the virus must be living and must be active. To introduce such virus into a susceptible dog without in some way controlling the effect of that virus was the easiest way of infecting a dog with distemper. Laidlaw and Dunkin's original method was to create a temporary immunity by the use of a devitalised virus which they called vaccine, and to follow with the injection of living virus. Their second method was to give a simultaneous inoculation of virus and serum. It was recommended in the early days that serum should be given first, followed at once by virus. Major Comerford had now stated that he obtained better results if virus were given first and then the serum later. He would like, however, to give a little word of warning at that point. In the laboratory they could repeat Major Comerford's work and results: it was an every-day occurrence for them to do so. But they had the dogs very carefully under observation all the time and so could observe and deal with any troublesome results. He would like to ask Major Comerford whether, under the ordinary conditions of general practice, he had ever seen any untoward results soon after the use of virus followed by serum. He could quite realise that, provided the amount of serum given was adequate, such a method of inoculation would be successful. Living viruses, as they knew, could not readily be standardised; all dogs did not respond to the original dose of virus in the same way. The whole thing was a question of balancing the virus and serum. If one could be sure that one's virus and serum were always of a certain potency, then it would be quite an easy matter to work out such a method as Major Comerford had found so successful. But he did think that until one was able to say definitely that so much virus was contained in every sample and so much serum was contained in that sample, one should go very warily before one abandoned for a new method one that had stood up to the test of time, *viz.*, the vaccine-virus method. Further, Major Comerford had stated that he had never had a breakdown. Had those animals been exposed to infection?

Continuing, Major Dalling said that the essayist had dealt very fully with leptospiral jaundice. As one of the trio who showed that "yellows" in dogs was actually caused by leptospiræ, he congratulated him on what he had said, because most of the statements Major Comerford had made to them were, in his opinion, very true indeed. There was no doubt that the use of leptospiral vaccine, given in two doses at a certain interval, would prevent to a considerable extent that disease in foxhounds and other dogs. The use of serum, he agreed, was not of much value as a curative measure if the case was well developed. It was certainly of much service, however, in in-contact cases.

Finally, he would mention that in the silver and other types of foxes bred and reared in this country, leptospiral jaundice was quite prevalent. They showed the same symptoms as dogs and responded to the same types of treatment.

Captain F. C. Gillard (Folkestone) said that he would like to add some remarks by way of stressing what had already been said regarding the younger men of to-day not having the same facilities as those of older generations. In his day students had very many more facilities for becoming familiar with the ordinary stable management, breeding, breaking, riding and training of horses, and with the consequent benefits that arose from that close association. He thought it would probably be admitted by the teaching schools of to-day that the young men entering the colleges did not get these same facilities, and they should try and do something to give them that practical training in horse management that they, in their day, did undoubtedly get. He found, in talking this matter over with his fellow practitioners, that there did seem to be very general regret that a big proportion of men qualifying in recent years had not had the advantages of which he had spoken,

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with the consequent result that too great a number of them were apparently losing touch with these essentials for successful equine practice.

He did not wish his remarks to be interpreted as any indication that he was out of sympathy with the treatment of the smaller animals: to-day, unfortunately, his own practice was 90 per cent. dogs instead of horses—he was one of the victims through residing in a district which had become almost de-horsed. He felt the change very keenly after enjoying many years of equine practice—and it was because of that that he particularly stressed the point that in starting his profession the student should bear in mind first the study of the horse: subsequent specialisation on the dog was of course entirely a personal matter.

With regard to another point mentioned in the paper, some remark had been made about the care which the younger men, particularly, should exercise when called to an accident. It had frequently been his lot to be the veterinary official at race meetings, and it was a very unpleasant experience to have to decide on the spot whether or not an animal had to be destroyed: of course, the crowd of men standing around and giving advice had no reputation to lose. He strongly supported the statement that in such situations one should not be too hasty in making up one's mind. One should take one's time. If it was possible to get the horse on his legs, careful note should be taken of his attitude, of the way he got up and the way in which he took the few steps he might be asked to move. In the great majority of such cases one obtained the clue to where the injury might be by the symptoms the horse would immediately show. If the injury to the spine was at all a serious matter, in 90 per cent. of cases they would see knuckling over of the hind fetlocks and a tendency to cross the legs, and if those symptoms were noticeable he thought it was up to the veterinary surgeon straightway to urge that no undue strain should be put upon that horse for some little time.

He would mention one case to emphasise that. He was out with the Mid-Kent Stag Hounds on one occasion, one of the followers being an officer who had just bought a high-priced hunter. During the run the horse took a bad toss over a post rail and the rider was laid out temporarily. This gentleman would not listen to his (Captain Gillard's) advice to put the horse up at a farm close by, although the animal showed the symptoms to which he had just alluded—and he explained to the owner that he feared the horse had cracked his spine—but mounted again and went off. At the start he (the speaker) was in front of him, but suddenly the officer galloped by shouting "What about your broken back now?" He jumped several fences before the deer was taken, but after standing about five minutes and when attempting to walk his horse, the latter showed the symptoms again, and that night the animal went down in the stable and had to be destroyed, and on *post-mortem* examination he found two lumbar vertebræ badly fractured. Had the horse been immediately rested, perhaps the crack in the bones would have healed.

Professor W. M. Mitchell (Edinburgh) observed that his sympathies were all with the younger generation because for the last 100 years successive generations of practitioners, to his mind, had been leading everybody astray with regard to affections of the horse. He wished to direct attention to what he considered to be the undue importance given to local conditions by elevating them to the position of individual diseases founded largely on a limited clinical view. He stressed the necessity of the study of surgical pathology, *i.e.*, the correlation between clinical signs and pathology, in the investigation of diseases in the horse and instanced the widespread nature of the *post-mortem* findings in horses rejected for navicular disease, roaring, shivering and the other conditions designated in the Horse Breeding Acts which he regarded as local manifestations of one general disease.

Looking over the paper, the debatable points were so numerous that metaphorically he threw up his hands in despair at the thought of adequately discussing it in the few minutes at his disposal, because he would like to take some of the conditions called injuries and some called diseases and change them over. For instance, why were corns called injuries? Were not the majority of corns secondary to an inflammatory process which affected the angles of the third phalanx and the adjacent solar matrix, in reality one of the local manifestations of the generalised disease—osteo-arthritis?

The significance he placed on grunting as one of the abnormal laryngeal sounds met with in the horse was founded upon the *post-mortem* examination of the larynx of four horses, which were grunters, in each of which there was some degree of degeneration of the intrinsic muscles of the larynx. He held that the varying amount of abnormal laryngeal noise heard in horses was dependent on a varying degree of degeneration of laryngeal muscles and this was secondary to nerve degeneration. This damage had to some extent been corroborated by a recent article in the *Journal of the Royal Army Veterinary Corps*.

Damage to the peripheral nerves was common in the horse, the lesions being in the nature of a patchy fibrosis which obliterated nerve fibres, and the left recurrent laryngeal nerve appeared to be one of the nerves so affected.

In the work on bones and joints, which he had been carrying out for some years now, he

had gained the impression that further progress towards the better understanding of the various conditions affecting them was likely to come from a study of the circulatory and nervous systems. The fact that section of the median nerve of a horse led to increased heat in the lower part of that leg for months afterwards led him to suggest that it was possible that some of the conditions in bones and joints might be secondary to fibrosis affecting nerve trunks. In both cases there is a disturbance of the vaso-dilator mechanism.

The fibrosis in nerve trunks was itself due to disturbance of the circulatory system, but what caused this disturbance remained to be discovered. Professor Mitchell said, in conclusion, that some people regarded surgery as being of little or no scientific interest, but surely, he contended, the problems associated with osteo-arthritis in the horse afforded a wide field for study with a view to prevent the immense amount of disability, not to mention complete loss, which it occasioned.

THE REPLY

Major Comerford, replying to the points raised in the discussion, said that unfortunately he had rather been taken to task because he was said not to have kept to the title of his paper. He was not ready to admit that he had not kept to the title of the paper—it was a very wide title, but his point was that he had viewed that paper in a different perspective from that in which other people had viewed it. He viewed it from the point of view of hunting; others had viewed it from the point of view of the horse. He felt that he had done only right in including the foxhound, without which they could not have hunters.

While he was on that subject he would like to say that he did feel that Laidlaw and Dunkin had not only given the profession a wonderful treatment for distemper, but had provided the members of the profession with a wonderful introduction to every pack of foxhounds in the world, and he thought it was up to the profession to take that gift and make the most of it.

He agreed with Major Aston regarding stable management—or, in this case, kennel management—and the younger members. He knew that the veterinary surgeon, and still less the student, could not run a pack of foxhounds but, in his opinion, it was a great pity they could not, because then the younger men would learn the ins and outs of stable management as affecting both horses and hounds. He felt strongly on this point because he did feel, taking the profession as a whole, they did not take the interest in foxhounds that they should take.

To refer to the various criticisms that had been made; the first was in connection with hæmorrhagic gastro-enteritis, in which Captain Reynolds made mention of the use of a foot bath. He had never heard of that in connection with the treatment of that condition; it was used in kennels essentially for the treatment of foot ailments—if no foot bath was available, the same result was affected by sprinkling common salt in the yard, the idea being to harden the feet, which he thought was the only reason why a foot bath was used in connection with a pack of hounds.

He stood corrected in the matter of the iliac arteries in connection with thrombosis.

In regard to over-reach, he thought perhaps Captain Reynolds was thinking of the more serious over-reach, where the damage was in the region of the back tendons; he (Major Comerford) was referring more to the over-reach which might lay a horse up for two or three weeks or longer, which he thought was always done by the sharp posterior edge of the shoe and which caused wounds in the region of the heel. He admitted that boots and bandages would tend to prevent serious injury in the region of the tendons.

With regard to Major Dalling's remarks, he had had considerable experience of that aspect of the subject. As he had stated in his paper, for the past three years now that experience had been gained in connection with two packs of foxhounds. On an average, 50 couple of puppies had been inoculated in each pack and, so far, so far as he knew, there had been no breakdown. The only cases of distemper which had occurred in those kennels had been in puppies which had been brought in from walk and which had not been inoculated, but had been kept in contact with those puppies which had been inoculated, while out at walk, by the virus serum method. In none of the inoculated puppies, however, had a single case of distemper so far occurred.

He had had experience this last spring where puppies had been drafted from these kennels to others where distemper was raging at the time, and so far as he could say, having made enquiries, those puppies stood up against infection.

Concerning leptospiral jaundice, as he said in his paper, preventive treatment had not been satisfactory and they had given it up—so many puppies died within a few days of treatment. Now they relied on curative serum, combined with infusions of normal saline solution.

With regard to Captain Gillard's story of the horse with the broken back, he, too, could vouch for similar cases, and not only broken back but broken pelvis and broken metatarsal bones, where the horses had continued hunting.

In conclusion, might he thank his hearers for the way in which they had received his paper.

An Institute of Tropical Medicine, established on the initiative of the Foundation for Scientific Research, has been opened at Antwerp.

General Article

AN ANALYST'S RANDOM JOTTINGS ON POISONS*

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Public Analyst for the City of Newcastle-on-Tyne

When your Secretary asked me to read a paper on poisons, I felt some difficulty in thinking out what I should say. If I were to deal, simply as an analyst, with the methods of detection of the various classes of poisons, I should become so technical that only an analyst would be able to follow, and I should moreover be giving information that to you, as veterinary surgeons, would be neither very useful nor very interesting; and if I were to attempt to treat, on the other hand, of the symptoms of poisoning and the action of poisons on man or animals, I should be trenching on ground with which you are already much more familiar than I am myself. After a good deal of thought, I gave up the idea of writing any systematic paper or formal address, and thought I could more usefully talk about a number of aspects of the subject, more or less miscellaneous and unrelated to one another, but all having some bearing on the matter of the investigation of cases of suspected poisoning, both from the analyst's point of view and from that of the veterinary surgeon or the medical man.

It is very difficult, perhaps impossible, to give any accurate definition of a poison. We know that almost any substance, taken in excess, will act injuriously on the system, and we all recognise the truth, in a degree, at least, of the statement that one man's meat is another man's poison; but in the ordinary commonsense acceptation of the word we mean by a poison any substance which, when eaten or otherwise introduced into the system, even in small amount, will cause illness or it may be death.

Of such substances we nowadays know a great many; some of mineral, some of animal, some of vegetable origin, and some the origin of which may be said to be indirectly vegetable, such as the various synthetic drugs prepared ultimately from coal tar, some of which are, as you know, highly poisonous. If, then, the chemist is given a substance, and is asked, is it, or does it contain, a poison, it is clear that he must, in order to answer the question, be acquainted with the properties of all these poisons, and be able to apply tests which will enable him to recognise any one of them. Obviously, if he had to consider them one by one, and apply tests successively for the recognition of each individual poison, his task would be almost endless. Some kind of classification becomes necessary, and he therefore groups them together, according to their chemical characteristics, as metallic poisons, acids, alkalies, alkaloidal poisons, and so forth. He puts a portion of the substance through a certain procedure, the result of which enables him to say, for example, that there is no metallic poison, or no alkaloidal poison, present, and thus clears off at once not a single substance, but a whole group of substances; and if, on the other hand, his procedure has shown him that metallic poisons are present, his work is then limited (for cases in which more than one poisonous substance is present are very rare) to the investigation of this group of poisons only, to discover which individual of the group is there.

Now some of these procedures are lengthy and difficult, even if the substance received is the poison itself; but the chemist rarely receives the poison itself. He gets some food, suspected to contain the poison, or vomit or stomach contents, or the organs of the body itself if death has taken place; and he is asked to find and to identify a substance—probably present, if at all, in very small quantity—in a large mass of inert material from which, before he can identify it, he must separate it. This greatly increases the difficulty of his work, for he has to consider not only what methods he can adopt to remove or to destroy what, for his purpose, we may call the extraneous substances present, but also what may be the effect of any treatment he might suggest for that purpose, upon the poisons that may be present. For while some poisons, such as the metallic poisons in general, are very stable, and not likely to be changed or affected by any chemical treatment, those of vegetable or animal origin, and some of mineral origin, are many of them unstable, and readily destroyed or converted into other substances even by gentle chemical reagents. If he were to destroy the extraneous food, or vomit, or tissue of the organs, by burning it off carefully at a low temperature, he would find in the ashes any copper, and possibly any lead compounds that might have been present; but any compound of mercury, and most probably any arsenic, if either of these was the cause of the poisoning, would be volatilised and lost irretrievably, and any poisons of organic, *i.e.*, of animal or vegetable origin, would be burnt off and destroyed with the extraneous matter. Again, if he used strong sulphuric and nitric acids, by which he could quite well get rid of the extraneous matter, he would recover from the residue not only any lead or copper, but also any arsenic or mercury; but he would have destroyed almost any poison of organic origin.

So, if the chemist has no initial guidance, he must divide his material into four or five portions. He will burn off, or destroy with acid,

* Paper presented at a meeting of the North of England Division, N.V.M.A., held at Newcastle-on-Tyne, September 2nd, 1933.

the extraneous matter of one portion, and examine the residue for mineral poisons; he will treat another with solvents of one kind or another, in the endeavour to extract from it alkaloidal poisons; and he will thus, as you see, have four or five separate investigations to make, each of them long and laborious, before he has ascertained the class of poison present—and still he has to apply further tests, before he can satisfy himself as to the nature of the individual poison.

Remember, too, that for each of these investigations he must, if he possibly can, divide the amount of material he has allotted to it into two, so as to reserve one half for repetition in case of accident or for confirmation; and that in all probability the quantity of poison present in the whole material is very small; and you will realise that such a search for poison is a very difficult and very anxious procedure.

It will be further evident, and it is to this that I am leading up, that if the chemist has any initial guidance—if he can learn through the circumstances of the case that it is impossible or highly improbable that certain poisons can be present, or, on the other hand, likely that they are present—his work may be very much simplified, and not only will he probably be able to isolate and identify the individual poison more quickly, but the chances of his missing it, if it should be present in extremely small quantity, will be very much reduced.

This is where the medical man or the veterinary surgeon can come to the help of the analyst. He classifies poisons, not according to their origin or chemical characters, but according to their effect on the human or animal system; and he is able, from the symptoms shown by the ailing or dying animal, and from the appearance of the organs after death, when death has occurred, to form at least some idea of the nature of the poison present, if poison there be—much more able than is the analyst, whose knowledge in this direction is, as a rule, empirical and incidentally acquired, and not systematic. The conclusions or opinions which the veterinary surgeon can derive from such knowledge, and any information regarding the surrounding circumstances (which the veterinary surgeon, visiting the spot, can usually obtain, but which the analyst cannot), should always be communicated to the analyst, who should also be told of any medicines that may have been given, and, if only portions of the food or vomit, or of the organs, have been sent to him, should know the weight of the whole quantity, so that if he finds a definite quantity of poison in his portion, he may be able to calculate the quantity in the whole. If the opening and examination of the organs can be made by the veterinary surgeon in the presence of the analyst, whose attention he can direct to particular appearances, so much the better. I drew attention to this matter in my presidential address to the Society of Public Analysts in 1931, and it may not be inappropriate if I quote here what I said then:—

"Speaking of co-operation between manufacturers or their associations and analysts leads me to mention another aspect of work in which co-operation is extremely desirable, but, in my experience at least, frequently lacking. I refer to chemico-legal or toxicological cases, involving the examination for poisons of the organs of animals or human beings. Here you have the veterinary surgeon or the medical practitioner and the analyst both involved, and it would seem eminently desirable that they should examine the organs together in the first place. But this is seldom done, and the organs are handed over to the analyst, frequently in a way that should not happen. I have two extreme cases in mind, both of them recent. In one we received a stomach for examination, the whole contents of which had been removed and the stomach washed out. In the other, the whole of the intestines, with their contents, of a person supposed to have been poisoned, were sent to us, apparently without any previous examination. On opening them we found growths in such numbers and of such a size as seemed to us to be in themselves sufficient to account for death. My partner and myself were, of course, not competent to say definitely whether or not that was so; but had the medical man been present with us at the examination he could have given an authoritative opinion, and the search for poisons might not have been necessary. On the other hand, in another recent case, where the organs first came into the possession, not of a medical practitioner, but of a professor of pathology, he brought them to me and we opened and examined them together, so that each was furnished at the outset with the observations and inferences or suggestions of the other. It seems a great pity that this is not the usual practice."

Strictly speaking, the analyst's work is finished when he has identified the poison present and has determined or estimated its quantity. But he is often asked whether this quantity of poison would be a lethal dose or not—would, in fact, be sufficient to account for death. If he is wise, he will leave this question to be answered by the medical man or the veterinary surgeon concerned in the case; but the position is a difficult one, either for the analyst or the veterinary surgeon. In the first place, it has to be borne in mind that some poisons are very quickly eliminated from the system, so that the quantity which the analyst has found may not be, probably is not, the whole quantity which has been taken: this quantity cannot, of course, be less, and is probably more than the analyst has found. And, further, the records show that with many poisons there are the widest variations in their effects, quite small doses having in some

cases proved fatal, while much larger doses have in other cases only produced illness or disturbance, from which the patient has recovered.

Again, little is known of the effect of continued minute doses in producing so-called "chronic" poisoning. In such cases (and without doubt such cases, even ending in death, have occurred) the quantity of poison in the system at any one time may be so minute as to be obviously incapable of producing severe illness or death. Moreover, substances such as copper or lead, or even arsenic, have been found in persons in normal health, so that the mere presence of traces of such substances cannot be regarded as evidence of poisoning. To come to a decision, therefore, in any individual case, unless the quantity of poison found is obviously enough to account for what has occurred, all the circumstances of the case must be taken into careful consideration, and this, clearly, can only be done by the medical side—the analyst can be of little help beyond furnishing the fact of poison being present, although he will always be willing to help in consultation.

A very troublesome and difficult class of cases are those in which poisoning of animals is suspected to have occurred through emanations of one kind or other coming from industrial operations. I have had experience of a number of these where by-product coke-ovens, or the calcining of ironstone, have been involved. The waste liquors from by-product coke-works are liable to contain phenolic substances, relatives of carbolic acid or creosote, and there have been cases where animals have been taken ill or have died, and it has been suspected that this has been due to their drinking from streams into which these liquors have drained. In most of the cases with which I have had to do, phenols have either not been found at all, or have been found in such small quantity that it has not seemed likely that they could do damage. But here the difficulty of which I have just spoken comes in. We know very little of the effect of continued minute doses of these substances, especially in great dilution, though in the concentrated state we know that they are corrosive and poisonous.

A while ago we had a case of this kind, where the stomach of a cow was sent to us. We found no phenols or substances that might probably have come from coke-ovens, but we did find compounds of lead and copper, and though the amount of lead was very small, equivalent to only 40 milligrams or six-tenths of a grain of metallic lead, the veterinary surgeon was of opinion that death was due to lead poisoning. The source of the lead was a problem, for one would not have expected lead to come from coke-ovens; but we ultimately found lead compounds on the grass which the cattle had been eating, and were driven to the conclusion, from our experiments, that it was derived from the coal (probably from the pyrites in the coal) used in the works. The grass contained 14 parts of lead per million, and we calculated that the cow would swallow nearly four-tenths of a gramme, or six grains, of lead per day; but how much of that lead, in such enormous dilution, would be absorbed into the system it is impossible to say.

We have pursued our inquiries, and we find that dusts in industrial localities all contain lead: dust from our office bookshelves, for example, contained 510, and from the portico of our front door in Dean Street 909 parts per million; but whilst we find that grasses in the open country, away from roads, have never yielded us any lead, those in the neighbourhood of towns contain considerable quantities. That from St. John's Churchyard, for example, contained 92, and that from the Town Moor 61 parts per million. This is further puzzling, for as far as I know, no cases of illness, or of suspected lead poisoning, have been recorded in cattle pasturing on the moor.

A similar state of things exists in regard to arsenic. I was engaged in a case in which cattle were alleged to have been poisoned by arsenic deposited upon the grass from the fumes arising from the calcining of ironstone. We were able to show that arsenic, if present in the fumes at all, was there in such minute quantity that its presence could not be proved with certainty; and though it was present on the grass of the farm where the cattle had died, to the extent of five parts per million, yet it was present to exactly the same extent on the grass of a neighbouring farm where the cattle were all perfectly healthy, and I found then that there were six parts per million on the Newcastle Town Moor grass, where, as I have just said, no cases of poisoning or illness of cattle have come under my observation.

These are, as I have called them, "Random Jottings," and form in no sense a formal address; but I hope that they may at least have been of some interest, and may give rise to discussion on the subject.

Discussion

Mr. F. Pickering, in opening the discussion, thanked Dr. Dunn for his excellent address, and mentioned cases of poisoning which had occurred in his district through cattle picking up refuse from baryta mines. The cattle had a staggering gait, and appeared paralysed, though temperature and pulse remained normal. Poultry were often poisoned, and occasionally dogs, but after a few generations some degree of tolerance was established. He also referred to a case in which a dog had consumed about one-and-a-half pounds of biniodide blister without serious effect, other than vomiting and purging.

Dr. Dunn interposed to remark that barium carbonate was insoluble in water, but soluble in weak acids, and to some extent might be dissolved by the acids in the stomach. It should be borne in mind that lead accompanied baryta in these mines, and it was also necessary to

remember that some individuals seemed to possess a tolerance to certain poisons.

Mr. Jackson Young also thanked the essayist, saying that the Association was honoured to hear an address from that "Grand Old Man" of chemistry, Dr. Dunn. Mr. Young was especially pleased with the essayist's definition of a poison, and in making a plea for team work said that he would like to have more definite information regarding the quantities of materials sent for analysis, and the best methods of packing them for transmission to the laboratory. Although he had had no experience of the matter, he was much interested in Dr. Dunn's remarks regarding the effluents from coke plants. He had seen many cases of lead poisoning, and he was of the opinion that the veterinary surgeon should be able to perform simple tests for the commoner poisons, without, of course, encroaching on the province of the analyst. He would like to ask Dr. Dunn which of the salts of lead was considered to be responsible for lead poisoning. It was necessary to remember that, in addition to cases of malicious poisoning, cases of accidental poisoning occurred. Mr. Young mentioned as examples a case of cattle infested with lice, which had been treated by the owner by the application of two ounces of ung. hydrarg. to the poll. Symptoms of poisoning followed, and the administration of milk brought about recovery.

Speaking of the use of arsenic in sheep dips, Mr. Young said he had handled large quantities of such dips and had not observed any ill effects personally. He knew that sheep could be poisoned by drinking the dip, but he did not agree that arsenic could be absorbed through the unbroken skin. In support of this view he added that it was extremely rare to hear of poisoning among farm workers from the use of sheep dips.

Referring to Java beans, Mr. Young mentioned a case in which 24 cows died. On opening the rumen after death there was an escape of gas smelling strongly of hydrocyanic acid. Other cases referred to by Mr. Young were the poisoning of pigs following the eating of potatoes covered with a bright yellow mould, and the dangers of feeding, to pigs, swill containing decomposing fish heads: such material was deadly food for animals.

The Hon. Secretary (Captain J. R. Rider) said he was especially interested in the matter of the alleged poisoning of animals through drinking water containing the effluent waters from coke plants. He had had experience of a somewhat lengthy investigation into this subject, which included the actual testing of the waters on cattle, kept under controlled conditions. The results of this work led him to the conclusion that, provided the concentration of phenol did not exceed that found in the test waters, coke oven effluent water was not harmful to cattle. It might be stated that the concentration of phenol in the water used for the tests was greater than was likely to occur under natural conditions, and one was bound to be sceptical regarding statements that cattle were injuriously affected by drinking such effluent waters. Moreover, it should not be forgotten that in the past carbolic acid was a favourite remedy against contagious abortion, and the doses used were infinitely greater than cattle were likely to take under natural conditions.

Mr. P. Snaith asked a question concerning the quantity of poison necessary to produce death in a given case. He instanced cases in which animals had had access to paint tins, or a newly-painted water trough, and in which some had died from lead poisoning, and others had recovered. He also questioned the statement that coke oven effluent water was harmless to cattle, remarking that he believed a taint of carbolic could be detected in the flesh of cattle killed after consuming such water.

The Secretary interposed an observation that the test cattle to which he had referred had been slaughtered and it was impossible to detect any odour of phenol in the flesh. Phenol could be recovered from the urine of normal animals, particularly herbivorous animals.

Mr. C. G. Hill added his confirmation of the Secretary's statement concerning the absence of odour from the flesh of the cattle referred to.

Mr. W. L. Stewart added a contribution to what he described as the "phenol controversy." On one occasion when he had been injecting sheep with braxy vaccine it had been his misfortune accidentally to inject 5 c.c. of liq. cresol sap., instead of vaccine into one sheep. This animal died a week later from braxy. It did not die from phenol poisoning. He thought there was a tendency amongst stock owners to suspect water or cake supplies, and it was often difficult to satisfy them that their losses were due to other causes. He had had experience of carbon tetrachloride poisoning in sheep, and also an interesting case of phosphorus poisoning in sheep. The latter occurred in sheep grazing over an artillery range after firing had taken place. Enquiry into the matter revealed that smoke shells had been used; phosphorus was found in the organs of the sheep, and it was believed that this had been picked up from the grass. Incomplete combustion of the phosphorus in the shells had given rise to contamination of the pasture with the metal.

Mr. B. Thomas, speaking as a chemist, asked Dr. Dunn to express his opinion first with regard to sewage poisoning, and second with reference to industrial dusts. It had been said that 60 parts per million of arsenic caused damage to vegetation, and there was an allegation that this also caused injury to stock. He would like to know where the limit lay in this matter of lead and arsenic in dusts.

Dr. Dunn, replying to these questions, said it was impossible for the analyst to say definitely where the limit lay, so little was known on the subject, and there was so much variation of individual susceptibility. It was only possible to take the analyst's findings in conjunction with the clinical evidence in coming to an opinion.

Mr. H. C. L. Bloxam mentioned the question of immunity by referring to his experience in Valparaiso, where the water supply was notoriously bad. He said that people who had resided there for long periods could drink this water with impunity, but the same people, after a comparatively short absence from the district, were immediately susceptible to typhoid on their return. In one case this susceptibility had resulted in death.

This question was, of course, a matter of bacterial toxins, and though different from that which they had been discussing, it was interesting, especially as the experience had come under his own observation.

A scheme is to be introduced by the Ministry of Agriculture immediately, says the *Daily Telegraph*, to set up national grades for all meat. It will be a voluntary scheme, and will cover all forms of cattle, sheep and pork. Whereas the National Mark Scheme applies only to high-class products, this scheme will embrace all forms of meat fit for grading at all. In most instances the grades will be three in number.

Clinical Communications

TUBERCULOSIS AND THE INTRADERMAL TUBERCULIN TEST IN THE HORSE

E. G. CONISBEE, M.R.C.V.S.
Kimbolton

In early August an owner enquired whether I would test a horse for tuberculosis for him. The animal was a 16-year-old thoroughbred hunter that had been in the same ownership most of his life. He had not summered well, and in spite of the groom's best attention had failed to get into good condition for the last two seasons. I agreed to see him and to test him if it was still thought advisable. When seen he was spare of flesh, his coat a trifle harsh and rusty-looking. He was given the reputation of being fast, but had not gone so gaily the last two seasons. He was also said to be a "high blower," but the owner and his groom had detected a slight whistle during last season. There was no cough, with the exception of "just a cough when coming out into the fresh air in the mornings last season." It was decided to submit him to the test.

The hair was removed over an area of about one-and-a-quarter square inches on the side of the neck. The first attempt at injection into the very fine skin failed to produce a "pea" that could be either seen or felt and, in my anxiety to place the second not too deep, the needle was not sufficiently buried, with the result that a part of the dose escaped on to the surface. The third was satisfactory. We stood by the animal another five minutes or so, certainly less than ten minutes, but during that time the sites of each injection had swollen and become plainly visible.

The horse was seen again the next morning, when there was a decided reaction. Measurements were not taken, nor were they necessary; the swelling extended to roughly the boundaries of the clipped area; it was hot, and painful to pressure—although I think that the presence of tenderness should be taken with more reserve than in the case of cattle, or even coarser-bred horses. A second injection was not considered necessary, but was given out of interest, and at the final visit the reaction had about doubled itself. So far there has been no opportunity of a *post-mortem* examination.

It was a coincidence that on the morning of the final visit to the above, I was asked to see a cart mare six or seven years of age that had received more or less expectant treatment for some days. The owner had previously asked me to see her. She had not done well and had been subject to attacks of diarrhœa during the summer. She was thin but not emaciated; her coat was a rusty black—the owner complained she was "not black enough for him." Temperature was up a degree or two. The fæces were formed when seen. Rectal examination disclosed little, but a small breach in the membrane could be detected. A few days later she was found in a state of collapse in the field and was brought in, but slaughter was advised. On *post-mortem* examination the intestines only were seen, but their glands were affected, more or less throughout, with abscesses containing caseous material, and the mucous lining of the bowels was swollen and had the appearance of jelly.

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ELECTRIC SHOCK IN DOGS

HENRY TAYLOR, F.R.C.V.S.
Haywards Heath

The railway line from London to Brighton has recently been electrified, and the trains are no longer hauled by steam engines. A few weeks ago a retriever dog strayed on to the line and, treading on the live rail, received a shock. Not knowing exactly what had happened, but reasoning that it must be something to do with the rail he had just touched, he turned round and bit it, with the result that he received a second shock. After that he turned and fled. A few days afterwards he developed several patches of acute eczema on the top of the shoulder and on the region of the croup, which responded to the usual treatment, but the skin eruption may not be attributable to the influence of the electric current.

Another dog straying on to the line received several shocks and also tried to get his revenge by biting the rails. Each time he did so, of course, he received another dose. Finally he beat a retreat, but continued to cast longing eyes on that enigmatical rail.

The voltage is 600, and one surmises that the absence of more serious results may be influenced by the non-conductivity or the dryness of the pads of the feet.

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HYPERTHYROIDISM IN PUPPIES*

W. CAUDWELL, F.R.C.V.S.
Bournemouth

A two-year-old fox terrier gave birth to seven pups and four were drowned shortly after birth. Two of the survivors, when three weeks old, so alarmed the owner by their stertorous breathing that they were brought to me with an urgent request to chloroform them. On examination I found that they were in a condition approaching asphyxia, which was obviously caused by

* Case reported to the Southern Counties Division, N.V.M.A., at Bournemouth, September 15th, 1933.

great enlargement of the thyroids, these glands pressing on the larynx. The hyperplasia involved the lobes and isthmus of the glands in both subjects.

A week later the remaining puppy was submitted to my examination, and I found that it had the same trouble, though less serious, and the gland soon dispersed under iodine treatment.

Abstracts

[**Aphosphorosis in Herbivora.** (Trans. title.) Theiler, A., and Green, H. H. *Bull. de l'Acad. Vét. de France. 6.* 7. 271-304.]

Aphosphorosis is defined as a deficiency of phosphorus in the organism as a result of insufficient phosphorus salts in the food. Advanced stages are well known to veterinarians as rickets and osteomalacia. These terms apply to the same pathological skeletal condition occurring at different periods of development, the former in young animals, and the latter in adults.

Occurrence and Distribution.—Wherever the conditions have occurred, chemical analyses of the affected pastures have shown that they are poor in phosphates, while calcium salts are generally present in sufficient quantity. The deficiency of phosphates in the soil actually leads to deficiency in the grass, of which the mineral content is influenced by the climate. Other things being equal, it is in the dry countries that aphosphorosis mostly occurs. The severity and occurrence of the disease depend on the distribution of the rains and the amount of the fall. It is less common in temperate countries like Europe, where the condition is met less often and nearly always after dry years.

Susceptibility.—The condition is met in cattle and sheep but not in solipeds. The disease of horses known as osteoporosis or osteomalacia differs in pathology and ætiology. This latter condition can be artificially produced in horses by a diet poor in calcium, as where bran or barley grains form the greater part of the ration. These foodstuffs contain a high proportion of phosphates but are very low in calcium and the condition caused is an acalcicosis.

It is probable that a state of aphosphorosis exists in horses on deficient pastures, but it is not so evident as in cattle; it is most noticeable by a retarded development of the foals. All cattle are susceptible, but particularly young cows and especially after the first two calvings. Pregnancy and lactation predispose to the condition. Heifers and young cattle are also very susceptible, but dry cows and adult cattle are not affected to the same degree. Calves are insusceptible while suckling, though if they receive less milk than normal, as, for instance, because of udder disease of their dam, they may become affected. There appears to be no hereditary predisposition to the condition. Osteomalacic cows give birth to normal calves, but their retarded post-natal development may be explained as cows on deficient diet give less milk.

Aphosphorosis is also met in sheep and from the point of view of wool production in merino sheep it is important. Observations made in Australia and South Africa have shown that the fine wool which is sought by the factories in Bradford, England, is a product of sheep suffering slightly from aphosphorosis.

Symptomatology.—In cattle a marked symptom is depraved appetite, preference being shown for bones and carcass débris; the former symptom is known as osteophagia. In the absence of bones other objects are eaten (" allotriophagia "), such as pieces of leather, sack, paper, wood, stones, iron and even earth. A predilection for dry and white bones indicates a slight degree, but for rotten bones and pieces of carrion an advanced degree. In the spring when the grass is green and succulent, osteophagia may disappear temporarily. Cattle imported from healthy districts may show osteophagia in from three to six weeks after arrival in deficient pastures. Where it is not possible for allotriophagia to occur, as when the cows are kept in, a licking habit may develop, any object within reach of the tongue being licked. This licking habit, however, may be a symptom not only of phosphorus deficiency but also of a lack of chlorides.

Osteophagia may be met in cattle in good flesh, but they generally soon show changes, and they rapidly become poor and their coat dull. The change of coat may be delayed and their winter coat may be partly or wholly retained. In the young, the rate of development is retarded. This has been shown in controlled experiments, some of the results obtained being quoted. The animals on a diet deficient in phosphorus compared unfavourably in weight, size, rate of growth and milk production with those to whose diet phosphates had been added. Furthermore, those receiving the mineral ration also showed a healthier appetite. Clinical observation and experiments also showed that fertility was considerably reduced in cows on a diet deficient in phosphates and there was also a reduction in the milk yield.

Accidents and Secondary Diseases.—The most important secondary condition is botulism, caused by the ingestion of the toxin of *Clostridium botulinum* which is common in rotting bones and carrion. The depraved appetite of aphosphorosis may also account for poisoning by the ingestion or licking of arsenic or objects contaminated with arsenic from dips. Losses may also be caused by the ingestion of foreign bodies and poisonous plants.

Lameness may be observed in many cases and improvement follows correction of the diet. If this is not effected the lameness increases, deformities occur, and the animal is unable to move and perishes. In advanced cases of osteomalacia fractures are common. The condition of stiffness is known as " stiff sickness " in South Africa and " cripples " in Australia.

Pathology.—Analyses were made of the inorganic phosphorus titre of the blood of heifers on an adequate phosphorus diet. When they received more than 20 gr. of phosphoric acid per day the titre was normal, varying from 4-6·2 mg. per cent., with an average of 5·1 mg. per cent. In animals receiving less than 20 gr. and which were affected with aphosphorosis the average titre was 1·7 mg. per cent., varying from 1·3-2·8 mg. per cent. The blood calcium level remained constant, even in cases of a dietary deficiency in calcium.

Experiments showed that a reduction in the blood phosphorus titre was the first symptom of aphosphorosis, preceding osteophagia though coinciding with skeletal atrophy. In cases of prolonged deficiency the spongy tissue of the epiphyses shrinks, and the wall of the diaphysis becomes thinner and the marrow cavity larger. The weight of the bone is decreased and the spongy spaces become confluent and form cavities. In the compact bone small holes appear and on transverse section it appears porous. In later stages the bones become fragile and fractures occur. While atrophy of the bony tissue progresses from the interior to the exterior, growth occurs on the periphery in a normal manner though the periosteum laid down does not calcify but remains soft. When these changes occur in animals that are still growing they are most marked in the epiphyses, though the changes vary according to the age of the affected animal.

With regard to the ætiology, the writers state that there is no doubt that a deficiency of phosphates is the sole cause of rickets and osteomalacia in cattle.

Prevention and Treatment.—The prevention and cure of aphosphorosis are, of course, based on the addition of assimilable phosphates to the diet. The response of the aphosphoric organism to this treatment is immediate, except in extreme cases accompanied by excessive periosteal changes, but even in these an improvement is possible. The interrupted growth of young stock is immediately resumed with surprising rapidity.

Milking cows need the largest doses as a kilo. of milk contains nearly 2 gr. of phosphoric acid and a cow giving 10 litres loses 20 gr. of P_2O_5 per day.

Bran is a suitable substance to supply the lacking phosphates as it contains 2·1 per cent. P_2O_5, and 1 kg. of bran supplies 21 gr. of phosphoric acid, which, being in the organic form of phytine, is easily assimilable.

Bone meal is another satisfactory source of phosphate, and this can be rendered more acceptable by the addition of salt.

According to Bekker, the best method is to add a solution of phosphorus to the drinking water. He has found that young cattle need 18 litres of water, dry cows 27 litres and milking cows 54 litres per day. He estimates that a concentration of 10 gr. of P_2O_5 in 18 litres of water suffices for all classes of cattle, as the consumption of water and need of phosphorus increase proportionately with the production of milk. The use of acid salts of phosphorus prevents precipitation in hard water, and so when using dibasic or normal salts of phosphorus in hard water the addition of a little acid is necessary.

J. S.

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[Some Observations on Rickets, with special reference to its occurrence in Pigs. McGowan, J. P. (1933.) *Brit. Med. Jour.* No. 3795. Pp. 599-602. Special plate of 5 figs. 25 refs.]

From observations on rickets in pigs, which were made from 1922-31, the question of the causation of the disease—whether due to deficiency of calcium, phosphorus, or vitamin D—comes under discussion.

The author finds that in pigs deficiency of calcium in the diet produces osteoporosis, a condition which cod-liver oil, vitamin D, and sunlight are practically without avail in curing, while the prevention and cure of rickets are achieved by these agents.

The early existence of " latent " rickets, as opposed to " patent " rickets, where symptoms are exhibited during life, is an important factor, particularly in relation to experiment and deduction.

Rickets is regarded as being due to a deficiency of phosphorus in the diet relative to its protein content and the growth potential of the animal, and its origination in the suckling animal is discussed from this standpoint. Vitamin D, to use a crude simile, might be regarded as playing the part of the governor of a steam engine, while phosphorus would be something more vital—say, the piston. McGowan and others have already shown that the probable mode of action of vitamin D, in its preventive and curative rôles, is by the setting free of phosphoric acid from the lipins, thus increasing the acidity as well as the available phosphate of the body.

In connection with the question of CaO and P_2O_5 absorption, emphasis is laid on gastric acidity and its neutralisation by excess of $CaCO_3$ in the diet, together with the percentage composition of CaO and P_2O_5 in relation to the amount of food required to appease the animal's appetite. The ratio of CaO to P_2O_5 in the diet,

as such, is considered to be of little importance in connection with the absorption and utilisation of these substances.

Observations on tetany and alkalosis in rachitic pigs with large quantities of calcium in the diet are recorded.

W. B.

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[Analysis of Experiments made at the Research Laboratories of the Minister of Agriculture on a New Method of Vaccination against Foot-and-Mouth Disease. (Trans. title.) Lignieres, J. *Bull. de l'Acad. Vét. de France. 6.* 6. 224-233.]

These experiments were at first undertaken on guinea-pigs, and later on cattle. Vaccination was practised on three occasions at intervals of ten days. The serum used was obtained from a heifer which had had a severe attack of foot-and-mouth disease and was afterwards inoculated with large quantities of virus O and A. The serum so obtained from this heifer was very active, and easily prevented generalisation in guinea-pigs inoculated with $\frac{1}{4}$ c.c. of serum subcutaneously, and with virus on the pad. The virus used was obtained from the tongue of recently-infected cattle and afterwards passed a number of times through guinea-pigs.

On guinea-pigs the first vaccination was made on December 1st, 1932. Eighteen guinea-pigs, weighing from 700-900 gm. each, all received $\frac{1}{8}$ c.c. of serum under the skin of the back and a similar dose intradermally at the same spot. At a place 4-5 cm. from the serum 1/20 c.c. of a dilution of the virus in glycerinated water was injected intradermally. There were also retained 18 guinea-pigs as controls. On December 10th, 1932, the second vaccination was made in the same manner as the first but using a double dose of virus—1/10 c.c. The dilution of this virus, which was extremely active for guinea-pigs, was very strong—less than 1 per cent. On this occasion, three of the guinea-pigs suffered a severe generalisation which was attributed either to their special sensibility or to too strong a dose of virus. The third vaccination, on December 20th, 1932, consisted in the injection of 1/10 c.c. of virus into the skin of the back without serum. No symptoms were observed.

On January 4th, 1933, the vaccinated and control guinea-pigs were subjected to a test inoculation on the plantar surface of the pad with a virus which was very active for guinea-pigs. All the vaccinated showed an immunity, whereas all the controls suffered marked generalisation and the majority succumbed.

The same method was applied to cattle with inconclusive results, and one of the control animals failed to contract foot-and-mouth disease when the test inoculation was practised.

Lignières concludes that his experiments with the vaccine in cattle are too few for the estimation of the value of the immunity conferred.

In discussing the experiments reported, M. Cesari points out that they only show that guinea-pigs can be inoculated against foot-and-mouth disease. He also draws attention to the difference between the disease in guinea-pigs and cattle, as in the former contagion does not occur between affected and healthy animals.

J. S.

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[Notes on Swine Fever: The Use of Vaccines. Varenne, H., and Marchand, E. *Rev. Gen. de Méd. Vét. 42.* 499.]

Swine fever is a disease which invariably appears following the introduction of fresh stock. The authors have studied several outbreaks and came to some interesting conclusions regarding the etiology and prophylaxis of the disease:—

(1) The introduction of young pigs having all the appearance of good health may cause an outbreak.

(2) The clinical picture may be pneumonia and enteritis, masking the true disease.

(3) The disease appears rather slowly in a chronic form in young subjects, while adults appear immune.

When an outbreak occurs the authors advise the administration of serum to all healthy animals and that the body of a pig dead of the disease be placed among them to enable them to obtain an active and durable immunity. The sick pigs should receive a double dose of serum and be kept separate, while the very ill animals should be slaughtered. An experiment was carried out on a piggery, all sick animals being killed, and the focus of infection was soiled litter instead of a dead pig. New-born animals were given 5 c.c. serum four days after birth with the following results:—

(1) Of 500 new-born pigs inoculated, none contracted the disease. Growth was normal except where the mothers did not receive serum.

(2) Of 100 pigs vaccinated, only four died with symptoms suspicious of swine fever.

(3) Inoculation of the sows before farrowing appeared to have an influence on the future of the small pigs.

(4) Serum used on adults as a curative sometimes gives disappointing results although it reduces the mortality.

In conclusion, the authors recommend isolation for all new purchases. When the disease does appear, sows about to farrow should receive 100 c.c. serum and the young pigs 5 c.c. four days after birth. Infection is likely to persist and new stock should receive a dose of serum. Soiled litter in preference to a dead pig is recommended as a source of active virus.

D. W. M.

XUM

[**Rabies Virus in Milk.** Binger, A. *Tierärzliche Rundschau.* No. 14. April 2nd, 1933. 22 refs.]

Although this article deals primarily with the transmission of the virus of rabies in milk, other aspects of the disease are also discussed. The author refers to the regulations now in force prohibiting the sale of milk or other products for consumption from bovines affected with, or suspected of being affected with, rabies, and reviews their efficacy in the light of recent knowledge.

After the dog, the ox is the most commonly affected animal. The former is usually the culprit, biting the latter about the head and face or on the hind limbs. The incubation period in the ox is said to be from four to eight weeks, although in one instance it was known to be one week. The symptoms, which are somewhat varied, are described, one of the most striking being a characteristic facial appearance due to paralysis of the upper lip. Death occurs in from three to six days.

Cases are quoted from the literature which indicate that the drinking of virus-containing milk is safe, but it would appear that abrasions of the mucous membrane of the mouth cavity facilitate the entrance of the virus. A woman suckled her child up to the day she died of rabies and the litter of a bitch remained healthy although the mother died. The work of Galtier indicates that the gastric juice effectively destroys the virus and further that a disturbance of gastric function may predispose to infection.

After elaborating many other points, the author expresses the opinion that they are not yet in a position to recommend the removal of the Regulations.

N. S. B.

RETIREMENT OF SIR EDWARD BROWN

Sir Edward Brown, the "Grand Old Man" of the poultry industry, who played so great a part in the foundation of the National Poultry Council and was its secretary for many years, is now, at the age of 82, retiring from the post of honorary adviser to the Council. At their last meeting in London the Council expressed their gratitude to him for his wise counsel, untiring energies, foresight, loyalty, and his many personal sacrifices.

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TYPE IN DALES PONIES

A strong appeal has been made by the Dales Pony Improvement Society, representing the popular utility pony breed of the extreme North of England, to the War Office to resume the stallion premiums, which ceased in 1931 on the score of national economy. The Council of the Society has discussed the question of increasing the standard height of the Dales ponies. It was resolved that a stallion be allowed to travel the area above 14·2 hands and under 15 hands, provided he was of approved type and four years old. The War Office wants the pony type, and it is hoped that the grants will again be forthcoming to secure that type.

Reviews

[**Lehrbuch der Sektion der Haustiere.** (Textbook of the *Post-mortem* Dissection of the Domestic Animals.) By Professor Dr. Curt Krause (Director of the Veterinary Pathological Institute of Sofia University, Bulgaria). 1933. Published by Urban and Schwarzenberg, Berlin. pp. 275, with 57 figs. Price RM 12 bound.]

The foundations of this book were laid some ten years ago when the author was assistant to the late Professor Wilhelm Schütz at the Pathological Institute of Berlin Veterinary College, and the book in its present form is somewhat shorter than intended, owing to financial difficulties of publication. The only parts omitted, however, were those dealing with special *post-mortem* technique connected with the various departments of parasitology, which, in any case, one expects to find in the literature of the latter.

The object of the book is to give a dogmatic system for the performance of *post-mortem* examinations on the domestic animals and the matter is covered by a general system applicable to all mammals with complementary sections dealing in detail with the horse, ruminant, pig, dog and fowl. The normal morbid anatomy of all parts as encountered in dissection is given in detail, so as to serve as a basis for assessing disease conditions.

The author follows the metoptic, or Virchow's method in dissecting the cadaver. In this system the body organs, after inspection *in situ*, are removed one after the other in appropriate order and examined further out of the body.

The various sections of the book deal with: I: General *post-mortem* technique; II: Special technique; III: Normal characters of the cadaver; IV: Type and cause of death; V: Standards for describing the findings; VI: The protocol (report); VII: The preparation of pathological specimens for further study (including embalming); VIII: The preparation of museum specimens; IX: Photography as an aid to pathological work; and X: The utilisation and disposal of animal cadavers and parts thereof.

The book is a most valuable guide to the subject and numerous figures and photographs render it easy to follow. The section on instruments is good and contains figures of three patterns of bar-iron trestle designed by the author to support the body of large animals upright in dorsal recumbency: they are obviously very advantageous and one wonders why they were not conceived and universally adopted long ago. Pathological laboratory technique, including preserving and fixing methods, is given its full attention, and photography is recommended as of definite value in this connection.

A commendable practice, which seems to be becoming fashionable among authors—that of giving selected references at the end of each chapter—has been adopted by Krause. There is also a good index at the end of the book.

The printing and reproduction of figures and photographs are excellent and the free use of thick type for key words in the text as well as for headings makes the use of the volume very pleasant. The only regrettable factor in connection with it is that, like several other German veterinary textbooks, it will be lost to the great majority of English veterinarians, for whose use there is no book on this subject nearly as good.

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The Animal Year Book, Vol. 2

This little book, published by The University of London Animal Welfare Society, is a readable and interesting collection of articles upon various aspects of animal life. Most of the articles are written in a strain completely devoid of the extreme sentimentalism of much so-called humane literature; in fact, they act almost as scientific contributions to conditions of animals in various parts of the world. The subjects dealt with include the "Sense of Pain in Animals," "Animals in the High Court," "The Traffic in Trapped Furs," "Animals Abroad (Russia, China, Persia, India, British Columbia, Barbados, South Africa, Morocco, Greece, Germany, France, Ireland, Norway, Sweden)," "Animal Literature and Euthanasia." The articles on animals abroad are most interesting. Altogether, the book reflects the great educational work which this society has undertaken in the welfare of animals.

THE MODERN-TYPE "COLLIE"

A correspondent to an Australian paper enquires: "What kind of collies are those whose photographs appear from time to time in Australian newspapers as choice specimens of the breed?" To his mind, they are not collies at all, and he makes the following indictment:—

"The true collie is Scotch by descent, but the hills and glens of Scotland never saw any shepherd dogs with the long narrow snout and contracted forehead of prize-winning collies here. That they are useless for working is proved by the fact that none of them is ever entered for the sheep-driving contests at our agricultural shows, neither are they in favour on the farms and sheep runs of Australia.

"The dogs that excel in working sheep have a strong, broad head, wide between the eyes, and a muzzle in proportion.

"Has the mere fancier taken it upon himself to give the collie dog a greyhound head, and a diminished intelligence, just as he has changed the bulldog into a helpless caricature of the original? If so, it is about time that a movement was set afoot to appoint as judges those who know and appreciate the dog in his natural form."

The editor comments: "It would appear as if the fanciers have a case to answer."

Report

GOVERNMENT OF NORTHERN RHODESIA

DEPARTMENT OF ANIMAL HEALTH

Annual Report for the Year 1932

Captain John Smith, *O.B.E.*, who has been in charge of the Department of Animal Health since 1921, and of the Department of Agriculture since 1926, proceeded on leave pending retirement on December 30th, 1932. His services in Northern Rhodesia dated from 1913 and, with the exception of the war years, he has been in intimate contact with the agricultural industry of the Territory for the 19 years following. The loss of his services, which at any time would have been a matter for regret, is rendered the more serious occurring, as it does, at a period when the industry is passing through a critical phase in its history. It is gratifying to all those who were associated with him to know that his services have been recognised by the inclusion of his name in the 1933 New Year's Honours List.

The greater part of the report under review is contributed by Mr. J. P. A. Morris, Acting Director of Animal Health. During the year the staff was depleted by the loss of two capable and experienced officers, Mr. E. H. Brogan, M.R.C.V.S., and Mr. W. F. Elderkin, Stock Inspector, whose deaths are recorded with the greatest regret.

The year 1932 was one of financial stringency, and, as has happened in other Colonies, retrenchment has restricted the activities of the Veterinary Department—this despite the fact that its services to the stock-raising industry have very materially increased during the same period. It can be taken as a fundamental principle that the utility and efficiency of a veterinary department depend almost entirely upon the mobility and radius of effective activity of its executive officers, and in spite of financial stringency and retrenchment, the objective during the past year has been to extend the distances over which an individual officer can carry out his duties. This policy has been justified by results, and it is pleasing to note that the Territory is free from major diseases of stock, with the exception of the Barotse Province, in which contagious bovine pleuro-pneumonia is enzoötic, and the high incidence of rabies which occasions anxiety and the control of which is in an unsatisfactory state. Nevertheless, we find in Part II of the report, under the heading "Disease Control," a list of animals diseases which have occurred, still exist and may in the future occur in the Territory, which would do credit to any veterinary text-book of tropical

(*Concluded at foot of column* 1, *page* 1227.)

N.V.M.A. Divisional Reports

MIDLAND COUNTIES V.M.A.*

MEETING AT BIRMINGHAM

The quarterly meeting of the Midland Counties Veterinary Medical Association was held at the Grand Hotel, Birmingham, on Friday, August 18th. Mr. A. Mackenzie, the President, occupied the chair, and the other members present were: Messrs. G. R. Benbow, S. Jennings, W. P. Blount, W. E. Ison, L. W. Heelis, W. K. Townson, S. M. Woodward, J. A. McLauchlan, G. E. Lancaster, J. W. Conchie, W. H. Brooke, O. V. Gunning, J. H. M. Hughes, T. B. Yarrow, G. F. Banham, T. H. Hobson, W. F. Aston, J. R. Barker, H. W. Griffiths, T. Marriott, R. H. H. Over, James Martin, senr., F. Chambers, A. A. Forsyth, C. K. Lomas and the Hon. Secretary (H. W. Dawes). The visitors included Messrs. W. Newey, W. R. Turnbull, T. C. Strachan, T. F. Stokes and A. M. McDonald.

Apologies for absence were received from the following: Sir Gilbert Barling, Sir Frederick Hobday, Sir John M'Fadyean, Messrs. Brennan DeVine, H. W. Steele Bodger, E. Franklin, T. Chambers, F. L. Gooch, H. Tudor Hughes, T. J. Brain, J. L. Brain, E. O'Neill, J. J. Burchnall, W. Trigger, L. C. Lepper, E. Kell, R. Hughes, Mark Tailby, Professor Macqueen, C. T. Parsons, E. Brayley Reynolds, W. Graves, Colonel Lowe, Messrs. K. A. Miles, T. Martin and others.

New Member.—The name of Mr. C. K. Lomas, of Stone, was submitted for membership, and he was unanimously elected, on the motion of Mr. Aston, seconded by Mr. Brooke.

Resignations.—The Hon. Secretary read letters from Mr. H. S. Cockburn, of Eastwood, and Mr. R. Lake, of Ashby-de-la-Zouch, tendering their resignations as members of the Association. In the case of Mr. Cockburn, he was afraid the decision was final, and they could only accept it with regret. He hoped, however, to persuade Mr. Lake to reconsider the matter, and he moved a resolution accordingly.

This was seconded by Mr. Martin, and carried.

Further Correspondence.—The Hon. Secretary read a circular letter from the National Veterinary Medical Association, drawing attention to the action that was being taken to combat advertising by unqualified practitioners relating to the treatment of animals, pointing out that the National was prepared to issue counter-advertisements when necessary, dealing with the matter.

The Hon. Secretary added that if members would send him copies of local newspapers containing such quack advertisements, he would communicate with the Secretary of the National and the necessary measures would at once be taken.

Council's Report

The Hon. Secretary presented the report of the Council meeting, held earlier in the afternoon. It was recommended that the next quarterly meeting be held at Birmingham on November 16th or 23rd, that Captain Angler, of Doncaster, be invited to give a demonstration and lecture on the subject of the thoroughbred, and that the Hon. Secretary should arrange for a second demonstration and lecture on some subject of canine interest.

It was further recommended that the rules of the Association be amended so as to provide that in future the election of members shall be by ballot, instead of by a show of hands.

The report was adopted, on the motion of Mr. Chambers, seconded by Mr. Barker.

Congratulations.—The President said they would all be pleased to welcome Captain W. K. Townson that afternoon and to congratulate him on his election to the Council of the Royal College of Veterinary Surgeons.

Captain Townson thanked his fellow members for their help in securing his election, and said that he was now more than ever satisfied as to the importance of the general practitioner being adequately represented on the Council. He hoped the Midland Association would make another nomination next year, but it was important to move in the matter early, in order to obtain the foreign vote. He supported the view of the National that the services of part-time veterinary inspectors should be retained as far as possible. They were sometimes at a loss to carry out their work satisfactorily owing to the absence of a chief veterinary inspector in the county, whose appointment was a whole-time one and who was able to supervise and co-ordinate the work of the part-time men. To that extent, he welcomed the idea of a whole-time inspector, but the appointment of local practitioners as part-time men working under him had much to commend it. He promised, as one himself, to study the interests of the general practitioner as long as he served on the Council of the R.C.V.S.

Paper.—Mr. E. F. Beckett, m.r.c.v.s., of Blandford, then read a paper "Diseases of Pigs of Interest to the Practitioner," following which an animated discussion took place. [Mr. Beckett's paper, and a report of the discussion, will be forwarded later for publication.]

* Received for publication October 23rd.

hygiene and medicine. If Northern Rhodesia is to be made a successful pastoral country the depletion of the veterinary services would appear to be a short-sighted policy.

Ll. E. W. B.

Following upon a vote of thanks to the essayist, tea was served at the conclusion of a successful meeting.

H. W. Dawes, *Hon. Secretary.*

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SOUTH-EASTERN VETERINARY SOCIETY*

SUMMER MEETING AT BECKENHAM

The Summer Meeting of the South-Eastern Division was held on Saturday, August 19th, at the Wellcome Physiological Research Laboratories, Langley Court, by kind permission of the Director (Dr. R. A. O'Brien). No business was transacted, the meeting being in the nature of a social gathering on this occasion. Invitations were issued to members and their wives and friends and also to the members of the Central Division.

The President of the "National," Colonel P. J. Simpson, and Mrs. Simpson accepted an invitation, and the following members and friends signed the attendance book: *Members.*—Mr. Arnold Spicer (President, S.E.V.S.), Major L. P. Pugh, Major J. Edgar, Captain F. C. Gillard, Messrs. S. F. J. Hodgman, E. P. Barrett, C. Roberts, H. P. Hogben, W. D. Halfhead, A. Cornish-Bowden, F. Crowhurst, J. B. Dier, A. T. Crowther, F. Marks, A. Eccles, A. B. McIntyre and Major T. Dalling (Hon. Secretary). *Visitors.*—Colonel J. Dunlop Young, Colonel H. Greenfield, Captain R. J. Stow, Messrs. J. K. Bateman, J. Stewart, D. Johnston, H. A. Crawshaw, W. Rhodes, E. Clark, G. R. Mills, B. L. Lake, J. M. Alexander and Ll. E. W. Bevan. *Ladies.*—Mrs. Spicer, Mrs. Pugh, Mrs. and the Misses Edgar, Miss K. M. Hernaman-Johnstone, Mrs. Hodgman, Mrs. Barrett, Mrs. Roberts, Mrs. and Miss Hogben, Mrs. Dunlop Martin, Mrs. and Miss Greenfield, Mrs. Stow, Mrs. Bateman, Mrs. Stewart, Mrs. Johnston and Mrs. O'Brien.

Apologies for absence were received from the following: Major-General Sir John Moore, Sir Frederick Hobday, Major G. W. Dunkin, Major A. N. Foster, Captain J. Bell, Captain E. Wemys Morton, Captain F. F. Horton, Captain E. Brayley Reynolds, Professor J. B. Buxton, Messrs. J. W. McIntosh, R. V. Isherwood, J. T. Turney, T. F. Hogben, H. S. Head, A. D. McEwen, E. Ebbetts, H. Gooch, F. Morgan, C. Rose, F. B. O. Taylor, C. W. Perrin, J. W. M. Hinton, G. Bloxsome and W. A. Hancock.

Arrangements had been made for the entertainment of the ladies in the beautiful grounds in which the laboratories are situated and, fortunately, the weather was favourable. Tennis and croquet were available and garden chairs had been placed on the terrace for the purpose of watching a cricket match which was in progress during most of the afternoon. The latter attraction proved most popular, but it is a matter open to discussion as to whether the cricket match or the opportunity for a quiet chat was the real attraction!

Under the guidance of Dr. R. A. O'Brien and of Major T. Dalling, the gentlemen made a tour of the laboratories and stables, where various demonstrations had been arranged for their interest and instruction.

At 4.30 p.m. the gentlemen joined the ladies and tea was served in the spacious dining room and a very animated and happy hour was spent.

Mr. Spicer, the President of the Division, then announced that, as all were aware, a charge of 2s. 6d. per person was being made in order that the funds of the Victoria Veterinary Benevolent Fund might benefit. (As a result of this collection the gratifying sum of £8 has since been sent to Dr. Bullock.) He then proposed a vote of thanks to Dr. O'Brien for his kindness in giving them the opportunity of spending such an enjoyable and instructive afternoon.

Dr. O'Brien replied briefly and said it had given him much pleasure to extend the invitation to the members and their ladies.

T. Dalling, *Hon. Secretary.*

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NORTH OF ENGLAND V.M.A.

MEETING AT NEWCASTLE-ON-TYNE

A meeting of this Division was held in the Agricultural Department, Armstrong College, Newcastle-on-Tyne, on September 2nd, 1933. In the absence of the President the chair was occupied by the junior Vice-President, Mr. A. C. Forbes.

The attendance book was signed by the following: Messrs. W. J. Young, J. Stewart, L. E. Perkins, C. G. Hill, F. Pickering, C. Nicholson, H. P. Lightfoot, R. Barker, P. Snaith, W. B. Towell, W. L. Stewart J. H. Taylor and J. R. Rider, Hon. Secretary. Messrs. A. Alexander, Brynmor Thomas, H. C. L. Bloxam, E. G. McAnulty and Dr. J. T. Dunn were present as visitors.

Apologies for absence were received from the President, Mr. H. S. Elphick, who was unavoidably absent in the South of England, Messrs. R. Simpson, J. R. Pratt, W. A. Doughty, W. Summers, H. Peele, T. M. Mitchell, J. J. McDowall, E. R. Callender, G. Durrant, J. D. Peele, C. Elphick, J. W. Rider and Dr. O. C. Bradley.

The minutes of the preceding meeting, having been published, were taken as read and confirmed.

Correspondence was read from the N.V.M.A. calling the attention of members to certain activities of the Organising Committee.

Election of New Member. — Mr. A. L. Bartholomew, Darlington, was unanimously

* Received for publication October 27th.

elected a member of the Association on the proposition of the Hon. Secretary, seconded by Mr. Perkins.

Nominations.—The following gentlemen were nominated for membership: Messrs. A. J. Alexander, 21, Ivy Road, Gosforth, and W. S. Gray, 3, Claremont Terrace, Sunderland.

Paper.—The Chairman then called upon Dr. J. T. Dunn, City Analyst, Newcastle-on-Tyne, to deliver his paper "An Analyst's Random Jottings on Poisons."

[Dr. Dunn's paper, and a report of the discussion, are reproduced elsewhere in this issue.—Ed., *V.R.*]

The Chairman proposed a hearty vote of thanks to Dr. Dunn for his address, and this was ably seconded by Mr. Jackson Young, who remarked that the members had spent an extremely profitable afternoon. They were greatly indebted to Dr. Dunn for the trouble he had taken in preparing his address.

Dr. Dunn, in reply, said it had been a pleasant experience for him to meet members of the veterinary profession to discuss problems of poisoning. He pleaded for more team work, in order that both the analyst and the practitioner might derive advantage from the work of each other. Only by such means could many of the problems be satisfactorily solved.

J. R. Rider, *Hon. Secretary.*

THE POISONS ACT: MEMBERS OF THE BOARD

The Home Secretary announces that he has appointed Sir Gerald Bellhouse to be Chairman of the Poisons Board established under section 16 of the Pharmacy and Poisons Act, 1933, and that the other members of the Board are as follows (the appointing authorities are added in parentheses):—

Sir Walter Greaves-Lord, Sir William Lobjoit, Mr. M. H. Whitelegge (Home Secretary); Mr. J. M. Johnston (Secretary of State for Scotland); Mr. J. N. Beckett, Dr. G. F. McCleary (Minister of Health); Mr. H. E. Dale (Minister of Agriculture); Sir Robert Robertson (or deputy) (*ex-officio* as Government Chemist).

Mr. J. H. Franklin, Mr. H. N. Linstead, Mr. G. A. Mallinson, Mr. E. T. Neathercoat, Mr. P. Sparks (Pharmaceutical Society of Great Britain); Sir William Willcox (Royal College of Physicians of London); Dr. R. Stockman (Royal College of Physicians of Edinburgh); Dr. S. A. Smith (General Medical Council); Mr. G. Roche Lynch (Council of the Institute of Chemistry of Great Britain and Ireland); Dr. J. W. Bone (British Medical Association).

The duties of the Board are to prepare for the approval of the Secretary of State a list of the substances which are to be treated as poisons for the purposes of the Act, and generally to advise him in regard to the rules to be made for the control of poisons.

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Those who practise "unorthodox medicine" are not practising "medicine" at all. They are as competent to do so as a student would be who spoke in terms of higher mathematics having no acquaintance with the elementary practice of arithmetic.—*Lord Moynihan.*

In Parliament

The following questions and answers have been recorded in the House of Commons recently:—

London Quarantine Station

Mr. Everard asked the Minister of Agriculture whether he can make a statement on the future of the London quarantine station?

Brigadier-General Clifton Brown asked the Minister of Agriculture whether he is aware of the apprehension of pedigree-stock breeders and of breed societies that the London quarantine station may be closed down; and whether, in view of the fact that it only cost his Department £700 a year and that many thousands of pounds worth of stock are annually exported to our Dominions thereby, he will take steps to keep it in being?

Mr. Elliot: I am aware of the importance which stock breeders attach to the London quarantine station for exported pedigree stock. It will be continued under existing conditions until March 31st next, and in the meantime I am in consultation with the Royal Agricultural Society of England and with the breed societies with a view to arrangements for its continuance after that date.

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Foot-and-Mouth Disease

Brigadier-General Brown asked the Minister of Agriculture the present position of foot-and-mouth disease in this country; and whether the recent outbreaks are now under control?

Mr. Elliot: During the past month five fresh centres of disease involving 22 separate infected farms have appeared in England, the counties concerned being Hertfordshire; Isle of Ely; Lindsey, Lincolnshire; Somerset and Derbyshire. These outbreaks have all been dealt with in accordance with the existing policy and no fresh cases have occurred since October 31st. The answer to the last part of the question is in the affirmative.

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Light Horse Breeding

Major Edmondson asked the Minister of Agriculture whether his attention has been drawn to the concern which is felt by those interested in the question of light horse breeding owing to the proposal to withdraw the Government grant; and if he will now take steps to obtain a renewal?

Mr. Elliot: I have received a number of representations with regard to the need for assistance for light horse breeding, and I am in consultation with the other Departments concerned. I am not yet, however, in a position to make a statement on the subject.

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Protection of Birds Bill

The Protection of Birds Bill, which has passed all its stages in the House of Lords, passed through Committee with drafting amendments.

On the motion for the third reading,

Major Hills said that if the Bill was passed it would be impossible for anyone to keep the common and popular cage birds. The people who would be chiefly affected were poor and in humble circumstances. If it was alleged that the keeping of caged birds was cruel, there must also be taken into consideration caged animals kept in zoological gardens and in exhibitions. There was a strong case to make out for one-and-a-half million people who had been held up as cruel and heartless. There was no reason why they should not be permitted to follow their

favourite pursuit in keeping their pets, and he regretted that the case of bird-keepers had not been better put before the Select Committee of the House of Lords.

Sir R. Gower, supporting the Bill, said that there was not one word of truth in the suggestion that it was class legislation.

Mr. D. Graham opposed the Bill and said that he would resent anyone suggesting that he was cruel because he kept a dog, rather than a bird, in captivity.

Mr. Lewis pointed out that there was no case for saying that the Bill had not received adequate consideration. There was nothing in the Bill to prevent the village lad from catching a bird and taming it. All it did was to prevent a profit being made out of the sale of wild birds. Wild birds at shows were only a small percentage of the birds that had been caught, so that the others might be shown. To suggest that village boys who went birds' nesting would be branded as criminals was to forget that under the existing law it was forbidden to take a nestling linnet. The Bill was desirable, not only for humanitarian but utilitarian reasons. Many of the species had a very real value to agriculturists and horticulturists.

Sir A. Wilson reminded the House that a few days before he had presented a petition containing 59,000 signatures against the Bill. The result of the Bill would be to drive the traffic in birds underground. Had the question of the licensing of dealers been pursued farther, it might have been possible to confer great benefits on those birds that were now dealt with in shops.

Commander Marsden said that the Bill had given the impression that it was going to stop a lot of cruelty to birds; yet instances of cruelty that had been cited in the House could all have been dealt with under existing legislation.

Lieut.-Colonel Applin said that, as one who lived in the country and loved birds, he felt that a wild bird caught and placed in a cage could not be anything but a miserable captive. No man confined to prison for life could suffer anything like a wild bird confined in a cage suffered.

Mr. Pike said that he objected to the Bill, because it was not explicit on how far the working man bird-fancier could go. Apparently the working man was not on the same ground as the rich man, who could enjoy the pleasure of a huge private aviary. The Bill was the worst piece of class legislation that the House had seen for a long time. (Hear, hear.) If the Government really wanted to protect wild birds from cruelty, they should take the peregrine falcon out of the list of protected birds.

Mr. Buchan said that the purpose of the Bill was to put an end to specific kinds of cruelty. There was actual and inevitable cruelty in the process which accustomed a wild bird to cage life. Undoubtedly the Bill did interfere with the poor man's hobby, and would work a certain hardship on the bird-fancier. But if they were to have a good law there must be some hard cases. The hardship in this case was mitigated by the fact that the fashion of keeping British wild birds in cages was becoming much less popular. Only about 10 to 15 per cent. of the caged birds kept in this country would be affected by this Bill.

Mr. Cocks suggested that the perfectly legitimate hobby of bird-fancying might be preserved by regulation or licence. It would be quite possible to bring in a Bill requiring that dealers in wild birds should be subject to licence and inspection. He would like to see the Bill recommitted, for it was far too drastic as it stood.

Mr. Buchanan said there had no doubt been cruelty, but the House ought to take care, in doing away with a man's hobby, that they did not substitute something worse.

The Bill was read the third time by 214 votes to 14—Government majority, 200. The announcement of the figures was greeted with cheers.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

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DIARY OF EVENTS

Nov. 20th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4.30 p.m.

Nov. 22nd.—Meeting of the Comparative Section of the Royal Society of Medicine, 1, Wimpole Street, W., at 5 p.m.

Nov. 23rd.—Meeting of the Midland Counties Division, N.V.M.A., at Birmingham.

Nov. 23rd.—Meeting of the South-Eastern Division, N.V.M.A., at Tunbridge Wells.

Aug. 13th-18th, 1934.—Twelfth International Veterinary Congress, New York.

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ROYAL VETERINARY COLLEGE

£25,000 for Chair of Animal Husbandry

Work on the rebuilding of the Royal Veterinary College at Camden Town is going well forward. One section, including part of the canine block, the out patients' department, and the department for dealing with the prevention of diseases in farm animals, is now completed. Work is proceeding on the other sections. A chair of animal husbandry has been endowed by the generosity of Mr. and Mrs. C. J. Courtauld, who have given £25,000 for the purpose. The chair is to be called the "Courtauld Chair of Animal Husbandry." The governors of the College are now anxious to secure endowments for the remaining nine chairs, which are to relate to such subjects as zoology, botany, anatomy, milk and meat inspection, physiology, pathology, and veterinary medicine and veterinary surgery.

On Wednesday of last week the Mayor of St. Pancras (Alderman Sidney Bolsom), accompanied by other members of the St. Pancras Borough Council, the Mayoress, and other interested persons, paid a visit of inspection to the College. The party was received by the Principal and Dean (Professor Sir Frederick Hobday) and the Treasurer (Sir Archibald Weigall). Sir Merrik Burrell, the Chairman of the governors, was unable to be present.

Sir Frederick Hobday said that a few years ago it was feared that the College would have to close its doors, which would have been an extremely serious matter for the agricultural industry. There were 330 students at the College, and last year 14,000 animals belonging to poor persons were treated.

Sir Archibald Weigall stated that the College had been through a period of financial strain during the last few years, but, with the help of

Government grants, there was now sufficient money for the rebuilding. By 1935 they expected to have a veterinary college which would be an example to the rest of the world.

The visitors afterwards saw demonstrations of surgical treatment and that of various diseases.

The visit ended with a tour of the various buildings, old and new. Among the premises still to be erected are a model dairy and model cowshed.

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Royal Veterinary College Medical Association

We are informed that the first two papers presented to the above Association during the past year, in order of merit, were: (1) "Some Clinical Observations on Bovine Mastitis," by H. C. Swann; (2) "Some Conditions met with in Racing Greyhounds," by J. S. Paterson.

The results of the Ageing Competition were as follows: 1, G. Hudson; 2, Wilson; 3, Misses M. Lane and M. Oyler.

Gold medals for the highest aggregate of marks in the professional examinations, 1932, were given to: Miss Sparke (Class A), Mr. Stokes (Class B), Miss Oyler (Class C) and Mr. White (Class D).

The results of the Horse Management Competition were: 1, Miss Scutt; 2, Miss A. Hickman and Miss Howell; 3, Mr. Hymans and Mr. Bowden.

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PERSONAL

We understand that Sir Arnold Theiler, K.C.M.G., DR. VET. MED. (BERNE), D.SC. (CAPE), Hon. Associate, R.C.V.S., formerly Director of the Veterinary Laboratory, Onderstepoort, Pretoria, has taken up residence in England.

At present Sir Arnold is working at the Research Institute of Animal Pathology, Royal Veterinary College, Camden Town, on the pathology of bone diseases.

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Appointment.—Captain R. Wooff, M.R.C.V.S., Chief Veterinary Officer to the Hereford County and City Councils, has been appointed to a similar position with the Middlesex County Council.

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Mr. Henry Gray.—We regret to learn that Mr. Henry Gray's condition has rendered necessary the further postponement of the operation for which he entered the West London Hospital several weeks ago. It is unlikely that this will be much longer delayed, however, and the sympathetic good wishes of all our readers will be extended to Mr. Gray and his family during this anxious time.

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R.C.V.S. OBITUARY

Gunn, William Donald, Lieut.-Colonel, late I.C.V.D., Romanel, 17, Burnaby Road, Bournemouth. Graduated London January 3rd, 1877; died November 8th, 1933, aged 78 years.

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TUBERCULOSIS IN CHILDREN

In the annual report for 1932 of the Chief Medical Officer of the Board of Education, issued on Tuesday last under the title of "The Health of the School Child," it is pointed out that, with the exception of deformities, not a single category of disease has increased since 1931. "Considering the widespread economic hardships experienced in 1932 this is an encouraging record."

Pulmonary tuberculosis shows a marked decrease. The incidence of definite cases of this disease was 0·5 per 1,000 in 1925; last year it was 0·2 per 1,000. Suspected cases were 1·6 and 0·6 respectively. Non-pulmonary tuberculosis fell from 1·1 per 1,000 to 0·7.

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VETERINARY INSPECTION IN DORSET

At a recent meeting of the Agricultural Committee of the Dorset County Council it was reported that at a meeting of the sub-committee consideration was given to the question of the appointment of one or more full-time veterinary inspectors with a view to carrying out duties under the Diseases of Animals Acts, and if practicable to make systematic inspections of all dairy herds throughout the county in view of the requirements of the Milk and Dairies Acts and Orders, and any possible requirements under the milk marketing scheme.

"Whole-time veterinary inspectors" (the report proceeded) "are employed by a number of local authorities in England, and the cost of the services in most cases is apportioned between the Public Health and Diseases of Animals Committees. In the milk marketing scheme provision is made for the preparation of a register of accredited producers, and it is understood one of the conditions required for inclusion on the register is veterinary examination of cows by an official veterinary inspector, and unless this inspection is available producers will not qualify for the additional payment called the guaranteed quality premium.

"It is recommended that a final decision on the question be postponed until the January meeting of the sub-committee with a view to obtaining further information on the question of a register of accredited producers."

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AFRICAN FAUNA AND FLORA

Convention Signed by Nine Countries

The new convention drawn up by the International Conference for the Protection of the Fauna and Flora of Africa was formally signed by the delegates of nine of the countries at the final meeting in the Moses Room of the House of Lords on November 8th. The nine are the Union of South Africa, Belgium, the United Kingdom and Northern Ireland, Egypt, Spain, France, Italy, Portugal, and the Anglo-Egyptian Sudan. The Abyssinian delegate refrained from signing until his Government has had an opportunity to study the text of the convention. Observers on behalf of the Governments of British India, the United States, and the Netherlands were again present.

In a closing speech, Lord Onslow said the conference had secured agreement on practically every point placed before it. The convention was only a beginning, but the opportunities offered by the conference for a detailed study of the subject and for communication between themselves should enable the African Powers to elaborate a scheme which would secure for all time the preservation of the magnificent flora and fauna of that continent. The experience gained would, he hoped, enable Powers in other parts of the world to make similar provisions in their own territories. He trusted that when the conference met again in three years' time it would be to consider a convention that had been ratified by all the Powers concerned.

The texts of the convention, a protocol providing for the calling of a further conference by the British Government within four years, and

a "Final Act" recording the proceedings at the conference, have been issued, with an official statement that the delegates of the nine Governments had signed all three documents and that the representatives of the Governments who had sent observers had also signed the third one.

The preamble to the convention states that preservation of fauna and flora can best be achieved (1) by the constitution of national parks, strict natural reserves and other reserves within which the hunting, killing, or capturing of fauna, and the collection or destruction of flora shall be limited or prohibited; (2) by the institution of regulations concerning the hunting, killing, and capturing of fauna outside such areas; (3) by the regulation of the traffic in trophies; and (4) by the prohibition of certain methods of and weapons for the hunting, killing, and capturing of fauna.

The methods by which these objects can be achieved are set out in 19 articles, to which are attached by way of an annex lists of animals and plants calling for immediate measures of protection by reason of their scarcity or threatened extinction. Additions to this list will be made by contracting Governments when found necessary, and special consideration will be given to species of animals or plants useful to man or of scientific interest.

The convention will be open for signature until March 31st next, and instruments of ratification, as well as later information of measures adopted in each territory, are to be deposited with the British Government for notification to all other participating countries. Provision is made for reservations to meet local conditions, and for any contracting Government to denounce the convention, though if the number of contracting Governments is reduced to less than four the convention shall cease to be operative.

National parks and natural reserves of all kinds are defined, together with the special measures of protection to be adopted in them, as well as the conditions governing settlement in the intermediate zones. In all cases where the establishment of national parks or reserves is possible, the necessary work shall be begun within two years from the date of entry into force of the convention, and where such establishments are impracticable at present, suitable areas shall be selected as early as possible for ultimate adoption.

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LIVESTOCK SLAUGHTERING IN LONDON

Commenting on the report of the L.C.C. Committee on the Slaughtering of Livestock, the Central Public Health Committee states that London, as regards the problem of the private slaughterhouse, is in a somewhat different category from most of the country. Speaking generally, the insanitary conditions in slaughterhouses dealt with in the report hardly exist in London. Although many of the slaughterhouses are old, they are frequently inspected and the bye-laws are rigidly enforced by the metropolitan borough councils. The fact that, in London, licences have to be renewed annually provides an additional means of control which is not available in the case of many slaughterhouses in other parts of the country. Further control is exercised by means of the constant visits of the borough councils' meat inspectors under the Meat Regulations.

"In London the problem of eliminating the private slaughterhouse is gradually solving itself, as will be seen from the fact that in the years 1873, 1897, 1925, 1928 and 1932 the approximate numbers of private slaughterhouses were 1,500, 467, 132, 109 and 86, respectively, whilst the number of killings fell from 587,000 in 1897 to about 88,000 in 1928 (of which 23,000 were at one slaughterhouse, that of the Woolwich Co-operative Society), and to about 80,000 in 1932. These figures do not include slaughterings at the Islington public abattoir, which is maintained by the City of London Corporation and in which the killings amounted to 350,068 in 1928. Information was obtained in 1928 that the slaughtering accommodation at the Islington abattoir was not used to its fullest capacity, and that the various classes of animals comprising the total of about 88,000 then slaughtered in private slaughterhouses could be easily accommodated at Islington for slaughtering. It would appear, therefore, that, if the recommendation of the Committee on the Slaughtering of Livestock for the closing of private slaughterhouses were adopted, the whole of the slaughtering for London could be carried out at the Islington abattoir."

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THE HORSE AND ECONOMIC DELIVERY

Speaking at the recent conference between retail distributors and motor manufacturers, held at the Commercial Motor Transport Exhibition at Olympia, Mr. J. Wall, a retail distributor, claimed that the horse was still holding its own in distribution, and that analysis showed that the density of delivery by such means varied from 4,000 packages a day per square mile in a local area to 150 packages in the outer areas. It was untrue, he added, to say that the motor van could do the work of two horses, and if the motor van could save time it was never more than 25 per cent. He was neither a supporter of the horse nor of the motor. He was merely interested in economic delivery.

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A MEDICAL COUNCIL FOR INDIA

It is announced in the last issue of the *British Medical Journal* that, after long delays, the Bill to establish a Medical Council for British India, originally introduced in 1931, has been passed by the Legislative Assembly. The function of the new Council will be to secure a uniform minimum standard for the higher qualifications of Indian universities and to arrange schemes of reciprocity with the medical authorities of other countries. The Council will be concerned solely with medical education, not with registration. The Council will endeavour to ensure the "sufficiency" of Indian medical degrees and to safeguard their international status.

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ARMY VETERINARY SERVICE

Appointments in India

The Commander-in-Chief has made the following appointments in India:—

Major Howard C. Stewart, R.A.V.C., to be Deputy Assistant Director, Deccan District, in place of Major J. O. Andrews, D.S.O., vacated.

Major Robert A. Gooderidge, O.B.E., R.A.V.C., as Deputy Assistant Director, Meerut District, in place of Major H. C. Stewart, transferred.

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MEDICAL RESEARCH IN TROPICAL AUSTRALIA

An Australian paper reports a pronouncement by the Minister of Health (Mr. Marr) emphatically denying statements at the British Medical Association meeting that the Commonwealth Government had withdrawn from research work in tropical Australia; the position really was that the scope of tropical research work had been increased.

With the enlargement of the ambit of the Commonwealth sphere of operations because of additional territories which had come under its control in the last ten years, it had been found that the old arrangements which made Townsville the pivotal point of tropical research, were inadequate.

When the School of Tropical Research had been established at Townsville, the scope of the work took in North Queensland only. Now it was extending to New Guinea, Papua, Norfolk Island, Nauru, and the Northern Territory. These changes had made the establishment of the research headquarters at Sydney a necessary step.

At the same time, services in Queensland had been maintained, and research headquarters were actively working at Townsville, Cairns, Rockhampton and Toowoomba.

Mr. Marr denied that there had been any change in the Commonwealth policy other than a gradual development of the efficiency of the local services, combined with the despatch of officers from Australia to those territories to investigate on the spot important tropical health problems.

"It is proposed to continue these investigations by trained officers sent from Australia for the purpose every year," Mr. Marr added.

Mr. Marr said the criticism directed at the School of Public Health and Tropical Research in Sydney was not justified.

The school had been in existence three years, and during the present academic year had been responsible for the granting of more diplomas in tropical research than were granted during the whole period of existence of the institute at Townsville. The status of the school was indicated by the fact that the British Government recognised it as one of the schools for the training of colonial medical service appointees. There were only four such schools in the Empire.

So far as medical services were concerned in tropical continental Australia, the problem was really one of evolving means whereby the application of existing knowledge could be carried out by State Governments and the practising medical profession.

Actually the occurrence of tropical diseases among the white population was only very limited, and the medical attention given to persons affected was of a high standard, particularly in Queensland. For instance, the recent outbreak of malaria in Northern Queensland had been adequately dealt with by that State Government. The control of malaria in Cairns by the Cairns City Council was another case in point.

Regarding hookworm research, the acquisition of new knowledge was not necessary now so much as the application by the existing local authorities and the medical profession of the knowledge available.

The hookworm campaign in Queensland had now reached a stage at which the Government regarded it as a question of routine sanitation. The necessary laboratory facilities were still being made available by the Queensland Health Department at four points in Queensland.

While the Commonwealth had been obliged to curtail expenditure for the time being, it recognised fully the necessity for further knowledge of the existence and distribution of diseases, and of all factors connected with the causation and distribution of disease in tropical continental Australia and in the tropical territories.

The Commonwealth would welcome from either State Governments or the medical profession any specific suggestions as to any further activities which it might undertake.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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BOVINES AND ACETONE EXCRETION

To the Editor of The Veterinary Record

Sir,—Professor J. McCunn's letter *re* acetone in the urine of cattle may create a false impression with regard to the disease, so-called acetonæmia, perhaps so far as to make some believe it is non-existent.

I had always thought that most practitioners regarded acetone as a normal constituent, but when it occurs in such an amount as to produce symptoms of disease then we cannot regard it as normal.

There is a great difference between the smell of the breath, urine and milk where it is in excess, and on several occasions it has enabled me to pick out the cow before she was noticeably ill.

The rapid disappearance of the acetone smell is often remarkable after glucose injections, though it may be only temporary.

Medical literature has not fuddled my head in attempting to find the cow suffering from excess of acetone but, I must confess, it has done in trying to find out the origin of the trouble. However, having kept this to myself, I do not suppose your correspondent knows about it.

Yours faithfully,

Richard Hudson.

Bridgegate,
Retford,
Notts.

November 12th, 1933.

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THE POSITION OF THE WHOLE-TIME VETERINARY OFFICER

To the Editor of The Veterinary Record

Sir,—I have been interested in the recent correspondence in your columns dealing with the alleged "indignity" of a veterinary surgeon acting under the supervision and control of a County Medical Officer of Health in accepting a whole-time appointment. It would seem obvious that the work of the Veterinary Officer would be that of an expert in his particular department and would be accepted as such.

The public health work of the Veterinary Department would constitute only a portion—an important one, it is true—of the whole of the public health work controlled by the Medical Officer of Health.

The information obtained by the Veterinary Department affecting public health, whether gained by an officer working under the "supervision and control" of the Medical Officer or by a separate department, would of necessity have to be referred to the Medical Officer of Health for action to be taken in the interests of the human population.

The wording of the advertisement may be a little misleading if taken too literally, but it would appear to me that it means "the officer appointed will be responsible to the County Medical Officer of Health."

The setting up of two departments—both instituted to protect and act in the interests of public health—would appear to me to be unnecessary and redundant. To my mind, a veterinary surgeon accepting such an appointment does so

knowing he is acting as an expert dealing with a particular branch of public health work and that as such he is responsible to the chief of his department, the County Medical Officer.

Whatever arrangement is made, the veterinary surgeon has to work under the supervision and control of someone or some body—either a Medical Officer or a committee of laymen. I cannot appreciate that either constitutes an indignity.

Yours faithfully,
GEO. N. GOULD, JUNR., M.R.C.V.S.

"Rockholme,"
10, Landguard Road,
Southampton.

November 12th, 1933.

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PART-TIME INSPECTORS' WORK IN GLOUCESTERSHIRE

TO THE EDITOR OF THE VETERINARY RECORD

Sir,—Herewith a copy of the report of our half-yearly inspection.*

In addition to this, we were asked to give a return of the number of cattle in the county found to be suffering from Johne's disease.

Between June 7th and September 30th last the number of cattle found to be affected by this disease was 41.

This, I think, is due to careful inspection and advice given by part-time inspectors during the last few years.

This highly satisfactory state of things is highly appreciated by the County Council, and they are asking for this good work to be carried on.

I have the honour to be, Sir,
Your obedient servant,
J. W. HALL MASHETER.

Ruddle House,
Newnham-on-Severn,
Gloucestershire.

November 12th, 1933.

[* Our correspondent's enclosure is as follows:—

REPORT OF GENERAL INSPECTION OF DAIRY COWS FOR THE HALF-YEAR ENDED SEPTEMBER 30TH, 1933

The veterinary inspectors have now completed their inspection for the half-year ended September 30th, 1933, of dairy cows in the county.

The total number of cattle examined is 48,928, made up as follows:—

Cows in milk	41,442
Dry cows in calf	7,486
	48,928

The number suspected to be suffering from any of the diseases specified in the Tuberculosis Orders or the Milk and Dairies Acts and Orders was 346, being ·70 per cent.

Of the suspected cases, tuberculosis (in its scheduled forms) accounted for 230, of which 228 were confirmed on *post-mortem*.

The diseases may be grouped thus:—

Tuberculosis (as defined in the Orders)	228 = ·47%
Suppuration of the udder ...	95 = ·19%
All other diseases	21 = ·04%]

* * * * *

"THE ART AND SCIENCE OF MINDING ONE'S OWN BUSINESS"

TO THE EDITOR OF THE VETERINARY RECORD

Sir,—A letter under the above heading, from Mr. J. F. D. Tutt, appeared in your issue of the 11th instant, and on reading it I asked myself just where his arguments lead. He appears to suggest that, by interesting itself in any milk-borne disease, the medical profession is not "minding its own business." Surely the question is one of human, as well as animal, importance, even if the risk in the case of undulant fever is only a small one, and Mr. Tutt himself agrees that "there may be a risk to the human subject."

If there is, as suggested, a campaign in favour of pasteurised milk, the reason is quite obvious to any unbiased person who has gone thoroughly into the question—namely, that milk so treated, under proper control and supervision, is the only really safe milk at the present moment. I am sure nobody will disagree with Mr. Tutt that a clean raw milk supply is the ideal one, but it must have the additional virtue of being safe and this, unfortunately, cannot be guaranteed.

In conclusion, I find it difficult to reconcile Mr. Tutt's final paragraph with his previous statement that he is in favour of collaboration with the medical profession, and I would remind him that the problem of cancer concerns animals as well as humans. I am quite sure that if Mr. Tutt has any biochemical line of investigation which may lead to a solution of this scourge, the medical profession will welcome it with enthusiasm.

Yours faithfully,
R. C. LOCKE, M.R.C.V.S., D.V.S.M. (VICT.).

Guildhall Chambers,
Manchester, 2.

November 13th, 1933.

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SHEEP SLAUGHTER

TO THE EDITOR OF THE VETERINARY RECORD

Sir,—With reference to the recent police court proceedings in Dublin in connection with the above, Colonel Doherty's statement in the issue of October 28th that Professor Craig's evidence will doubtless be noted by the Bench generally as a practical guide in dealing with a difficult type of case emphasises the importance of this matter in the minds of those who are opposed to the acceptance of this evidence, which led to a refusal to convict.

In our view, only experts on the subject of psychology could have supplied the evidence requisite to arriving at a decision in support of or against a charge of infliction of cruelty—which charge, in my opinion, was well founded—but surely the lesson to be learnt from the case is that the simple adoption of enlightened methods of slaughter would obviate the bringing into court of any such cases.

May I add that at least the profession will be agreed that the total suppression of any such little back-street slaughterhouses as that mentioned in this case is long overdue from the public health point of view alone. While toleration is to be extended to them *pro temp.*, let them be forced to conform to the letter of the law as much in regard to methods of slaughter as in any other direction.

Yours truly,
H. BISSET.

The Old School House,
St. Valerie,
Bray,
Co. Wicklow.

November 4th, 1933.

. . . . .

To the Editor of The Veterinary Record

Sir,—With reference to Mr. Bacon's letter in to-day's *Record*, I appreciated the theme of his first letter and I agree with him in accepting Professor Craig's opinion.

In his letter to-day Mr. Bacon raises the question of research and the education of public opinion. I am glad he has, as he brings to my mind, in sharp relief, a particularly refined form of cruelty that continues to cause endless pain and suffering although, many years ago, research workers showed how to prevent it. I refer to the giving of tubercle bacilli in milk to young infants.

While the application of existing knowledge like this is delayed ought one to approve of expenditure on research into the psychology of sheep?

Yours faithfully,

A. G. Doherty.

Martinstown House,
The Curragh,
Co. Kildare.
November 4th, 1933.

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JOHNE'S DISEASE: AN INACCURATE REPORT

To the Editor of The Veterinary Record

Sir,—*The Veterinary Record* of November 11th contains the report of the discussion following Dr. Sheather's address on Johne's disease at a meeting of the Southern Counties Veterinary Society. The remarks attributed to myself are incorrectly reported and, in consequence, are somewhat ludicrous. I should be glad, therefore, if you would publish the following corrections commencing:—

(1) "He (Mr. Gould) had been consulted, a few days ago, by the owner of a farm who, on veterinary advice, had, in an attempt to stamp out Johne's disease, slaughtered the whole herd and left his pastures, cowsheds, etc., vacant of cattle for two years. The land was harrowed and limed before cattle were put back on it again. Fifteen to 18 months ago he had restocked with heifers purchased from various sources, four of which he (Mr. Gould) was informed had within the previous three months developed so-called 'chill after calving,' wasting and scouring, and had, in consequence, been disposed of. He (Mr. Gould) examined one heifer which was a clinical case of Johne's disease. It would appear possible from this that the pastures had remained infective for two years. . . ."

(2) "He did not think any treatment could be called really economic unless possibly it was attempted in the case of a valuable pedigree animal close to calving from which it was desired to save the calf: the calf being weaned at birth and the cow then slaughtered. . . ."

Thanking you,
Yours faithfully,
Geo. N. Gould, junr., m r.c.v.s.

"Rockholme,"
10, Landguard Road,
Southampton.
November 12th, 1933.

The Editor acknowledges, with thanks, the receipt of the following:—

Communications from Mr. Ll. E. W. Bevan (Crowborough), Mr. C. H. Chalmers (Leeds), Mr. W. Collinson (Sheffield), Major T. Dalling (Beckenham), Mr. I. A. Galloway (London), Mr. W. H. Horne (Watford), Mr. R. C. Locke (Manchester) and Mr. A. Spicer (Oxted).

Report of a meeting of the Derbyshire Division, N.V.M.A., from Mr. W. J. Ironside, Hon. Secretary.

Diseases of Animals Acts, 1894 to 1927

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 31st Oct., 1933	15	20	18	1092	—	—	15	63	59
Corresponding period in									
1932	10	13	1	5	2	3	30	57	34
1931	15	15	—	—	4	5	9	85	38
1930	10	10	—	—	2	2	24	88	55
Total 1st January to 31st October, 1933	239	273	87	7,803	116	193	303	1,177	742
Corresponding period in									
1932	278	344	13	1,098	111	172	204	1,387	676
1931	395	440	97	10,649	124	221	233	1,626	688
1930	299	330	7	299	181	274	334	2,019	899

Note.—The figures for the current year are approximate only. § Excluding outbreaks in Army Horses.